JUN 13 1917
UNIV. OF MICH. LIBRARY

British Medical Journal

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE.

WITH SUPPLEMENT.

No. 2942. SATURDAY, MAY 19, 1917. Price 1s.

CONTENTS Page 1. **INDEX TO ADVERTISEMENTS Page 2.**

NEW EDITION. In Two Vols. 42s. net.

DEFORMITIES

INCLUDING

DISEASES OF THE BONES AND JOINTS.

A TEXT-BOOK OF ORTHOPÆDIC SURGERY.

By A. H. TUBBY, M.S.Lond., F.R.C.S.Eng.

Illustrated by 10 Plates and over 1,000 Figures, and by Notes of Cases.

1ST EDITION.—"The standard text-book in English on the subject."—*The Lancet.*

2ND EDITION.—"Standard work on the subject in the English language."—*Brit. Med. Jour.*

MACMILLAN & Co., LTD.,
St. Martin's Street, London, W.C.

FOURTH EDITION. JUST PUBLISHED. *xv., pp. 305, with 10 Illustrations, cloth, 6s. net.*

SQUINT:

Its Causes, Pathology and Treatment.

By CLAUD WORTH, F.R.C.S.,
Surgeon Royal London Ophthalmic Hospital (Moorfields), etc.

H. K. LEWIS, SONS & DANIELSSON, 63, Gt. Titchfield St., W.

By W. SAMPSON HANDLEY, M.S., F.R.C.S.

ILEUS DUPLEX.

AN ACCOUNT OF THE DANGEROUS COMPLICATION OF APPENDICITIS, AND OF ITS TREATMENT.
(Hunterian Lecture, 1916)
With Coloured Plate. 2s. 6d. net.

Bristol: J. WRIGHT & SONS, LTD.
London: SIMPKIN & Co., LTD.

By O. LEYTON, M.D., D.Sc., F.R.C.P.
Physician to the London Hospital.

THE MODERN (ALLEN) TREATMENT OF DIABETES MELLITUS.

READY IN MAY. Price 3s. net.

London: ADLARD & SON & WEST NEWMAN, LTD.

Now Ready. Pp. xi + 208. With 3 Charts. 5s. net.

ON ALCOHOLISM:

Its Clinical Aspect and Treatment.

BY FRANCIS HARE, M.D.,
Medical Superintendent of the
NORWOOD SANATORIUM,
Beckenham.

"Marked by candour, common sense, and moderation . . . likely to become the standard text-book."—*British Medical Journal.*

London: J. & A. CHURCHILL,
7, Great Marlborough Street.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

The Original and Leading Periodical in the English Language devoted to the Study and Practice of Roentgenology and Electrotherapeutics.
Monthly, 2s. 6d. net.

Contents of May Number.

PHYSIOLOGICAL BASIS OF ELECTRICAL TESTS IN PERIPHERAL NERVE INJURY. By E. D. ADRIAN, M.R.C.P.
THE USE OF X-RAYS IN THE GREAT WAR, WITH A NEW METHOD FOR LOCATION OF FOREIGN BODIES. By Major A. GAIR STRAW, A.M., M.D.
A CASE OF PIN SWALLOWING. By H. BLAIR, M.D., M.R.C.P.
Report of Society. Review. Abstracts.
Annual Subscription, in advance, 31s., including postage.

London:
WILLIAM HEINEMANN (Medical Books) Ltd.,
20, Bedford Street, W.C. 2.

Works by J. B. HURRY, M.D.

VICIOUS CIRCLES IN DISEASE. Second and Enlarged Edition. 7s. 6d. net.
THE VICIOUS CIRCLES OF NEURASTHENIA AND THEIR TREATMENT. 3s. 6d. net.
VICIOUS CIRCLES IN SOCIOLOGY AND THEIR TREATMENT. 2s. net.
POVERTY AND ITS VICIOUS CIRCLES. 5s. net.
THE IDEALS AND ORGANISATION OF A MEDICAL SOCIETY. 2s. net.

London:
J. & A. CHURCHILL, 7, Great Marlborough St., W. 1.

By C. MANSELL MOULLIN,
M.D.Oxon., F.R.C.S., Consulting Surgeon to the London Hospital.

ENLARGEMENT OF THE PROSTATE.

Fourth Edition. Price 5s.

THE BIOLOGY OF TUMOURS,

including the Bradshaw Lectures.

New and Revised Edition. Price 2s. 6d. net.

London: H. K. LEWIS & Co., Ltd., 136, Gower St., W.C.

Second Edition, revised and enlarged. Now Ready. Crown 8vo. 6s. net.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D.Camb.

London: EDWARD ARNOLD, 41 & 43, Maddox St., W.

TREATMENT OF JOINT AND MUSCLE INJURIES.

By W. ROWLEY BRISTOW, Capt. R.A.M.C.(T.).
Cloth. Demy 8vo. 240 pages. Fully Illustrated.
JUST PUBLISHED. 6s. net.
(*See Page 6.*)

HENRY FROWDE AND HODDER & STOUGHTON,
Oxford Press Warehouse, Paternoster Sq., London, E.C.

By FRANK KIDD, F.R.C.S.,
Assistant Surgeon and the London Hospital, Surgeon-in-Charge of Genito-Urinary Department, London Hospital.

JUST PUBLISHED. Price 5s. net.

COMMON DISEASES OF THE MALE URETHRA.

Being a Course of Lectures delivered at the London Hospital, designed to assist those who may be attending Genito-Urinary Clinics. With numerous Illustrations and Appendices.

BY THE SAME AUTHOR.

URINARY SURGERY: A Review.

7s. 6d. net.

"This book can be thoroughly recommended by those who are desirous of being acquainted with the modern position of Urinary Surgery."—*Glasgow Medical Journal.*

London: LONGMANS, GREEN & Co.,
39, Paternoster Row, E.C. 4.

"A magnificent Monument."—*Canadian Medical Journal.*

Pp. viii + 882, with 51 Illus. Price 14s. net.

DISORDERS OF THE HEART.

By ALEXANDER MORISON, M.D., F.R.C.P.,
Senior Physician to Great Northern Central Hospital.

"The book as a whole . . . *contains many striking criticisms of current theories and a new methodising of ascertained facts.*"—*British Medical Journal.*

London: BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C. 2.

By LESLIE THORNE THORNE, M.D., B.S.

NAUHEIM TREATMENT

OF DISEASES OF THE HEART AND CIRCULATION—(IN ENGLAND).

Fourth Edition, Enlarged. Price 5s. net.
Pp. viii + 104. With 28 Photographs of the Schott Exercises and 27 other Illustrations.

"It is the best and most practical work on the subject."—*West London Medical Journal.*

London: BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C. 2.

REGISTERED AS A NEWSPAPER.] [COPYRIGHT.] [ISSUED WEEKLY.

Founded 1834. **HUMPHREYS'** 28 Gold and Silver Medals

Mobile Hospital Buildings and the New Patent Brickwork System of Construction for Munition Factories and Dock Sheds.

SAILORS' AND SOLDIERS' MOBILE PANEL HUTS AND HOSPITAL WARDS

as supplied from Stock to the

British Government Departments, The British Red Cross Society, and Order of St. John of Jerusalem,

Etc., Etc., Etc.

Buildings shipped complete from our Works on the Thames. Standard Sizes, stocked in Sectional Panels, simple in construction, to erect abroad by ordinary labour.

May be inspected daily at

HUMPHREYS LTD., KNIGHTSBRIDGE, LONDON, S.W.

(CONTRACTORS TO THE ADMIRALTY, WAR OFFICE, AUSTRALIAN & CANADIAN GOVERNMENTS.)

PUNCTIFORM HAEMORRHAGES OF THE BRAIN IN GAS POISONING.*

BY

F. W. MOTT, M.D., LL.D., F.R.S., MAJOR R.A.M.C.(T.).

(From the Pathological Laboratory of the London County Council, Maudsley Hospital.)

THE subject of punctiform haemorrhages in the brain in gas poisoning has awakened new interest on account of its existence in fatal cases of shell shock with burial, and in cases of death from inhalation of poisonous gases, either as a result of their liberation by explosives in confined spaces, such as mines, trenches, and dug-outs, or as a result of an offensive gas attack by the enemy. I shall endeavour in this communication to explain the cause of these punctiform haemorrhages.

In 1907 I published in the *Archives of Neurology and Psychiatry* (vol. iii) a paper on "Carbon monoxide and nickel carbonyl poisoning." I came to the conclusion that the nickel carbonyl poisoning was really due to the inhalation of CO employed in the manufacture of nickel. Two such cases occurred of which I had the opportunity of examining the central nervous system, and I found multiple punctate haemorrhages throughout the white matter of the brain, as shown in photomicrographs.

In this paper I compared the naked-eye and microscopic appearance of the central nervous system in these cases of nickel carbonyl poisoning, with those observed in a case of suicide by illuminating gas, and I considered them to be identical in nature. I also reviewed in this paper the clinical symptoms and pathology of CO poisoning, in respect to the findings in the central nervous system, and especially the causes which occasioned the haemorrhages. All three cases died in from four to eight days with the complication of pneumonia. Thrombotic occlusion of cerebral arterioles or venules was considered to be the cause of the haemorrhages; in one case from the nickel carbonyl works an organizing thrombus was found in a vessel of the medulla.

In the case of suicide by illuminating gas, admitted under my care at Charing Cross Hospital, signs of cerebral haemorrhage occurred within twenty hours of commencement of the inhalation of the gas, for the limbs became rigid, and a plantar extensor reflex was obtained. At first the temperature on admission was 99°, but when the rigidity of the limbs and the plantar extensor response was discovered, six hours later, the temperature had risen to 105° and the pulse and respiration had become very rapid.

The nervous symptoms pointed to the occurrence of the punctiform haemorrhages found *post mortem* in the internal capsules, and it may be assumed that the rise of temperature might have been due to the toxaemia coincident with the onset of pneumonia; for when the patient died, on the fourth day, pneumonic consolidation was found. Full notes of the clinical symptoms and *post-mortem* findings were reported. Microscopic investigation showed fatty degeneration of the heart and of the epithelium of the convoluted tubules of the kidney.

Punctiform haemorrhages, attributed to hyaline thrombosis of small vessels of the white matter, have been described by Bignami and Nazari[1] in various diseases; for example, aestivo-autumnal malaria, apoplexy, diplococcal meningitis following pneumonia and measles. It is possible, therefore, that pneumococcic toxaemia was productive of, or associated with, the causation of the haemorrhages in these cases of CO poisoning.

But I am inclined to think that the CO poisoning alone would be capable of causing the punctiform haemorrhages, for the following reasons: In both cases from the nickel works there was evidence of old haemorrhages in the form of minute round or oval punctiform patches of softening, indicative of gas poisoning on some occasion previous to the man being obliged to give up work. And it was legitimate to attribute these symptoms they suffered with—namely, giddiness, vomiting, and headache (migrainous attacks)—to the gas poisoning, causing congestive stasis and haemorrhages. It is well to note that these migrainous attacks are frequently met with in men and officers who have been exposed to those conditions in which CO or other forms of gas poisoning might have occurred without fatal results.

From the facts observed in these three cases of CO poisoning, combined with certain anatomical conditions of the blood vessels supplying the white matter of the brain, to which I shall now direct your attention, an explanation can be offered why these miliary haemorrhages are found in the white matter of the cerebrum and basal ganglia, and not elsewhere in the brain. It must be recognized that a combination of factors may arise in CO poisoning, namely:

1. The heart, owing to the anoxaemia, has to beat faster and to do more work with less oxygen; consequently it may undergo fatty degeneration.

2. There is microscopic evidence of an irritative and degenerative endothelial change in the cerebral capillaries, as shown by mitosis of the nuclei, and a fatty degeneration, made apparent by osmic acid staining. These changes may be due, as Lancereaux suggested, to CO in the serum, but aggravated by the pneumococcal toxin, which is also responsible for a tendency to increased fibrin formation of the blood, and to thrombosis in those vessels in which the anatomical conditions favour the lodgement of emboli, or clotting of the blood from congestive or inflammatory stasis.

The microscopic appearances of these punctiform haemorrhages in known cases of CO poisoning, terminating in death by pneumonia, are similar to those shown in Fig 1, which is a section of the corpus callosum, showing punctiform haemorrhages, from a case of shell shock with probable CO poisoning.

Miliary Haemorrhages in Cases of Shell Concussion and Gas Poisoning.

I may now mention that the microscopic appearances found in these cases of CO poisoning, dying with pneumonia respectively after four days, eight days, and seven days, were in all respects similar to the appearances presented by sections of brains received from France, notified as dying of shell shock with burial and from gas poisoning—with one exception, and that only differed in the fact that a large part of the haemoglobin had been converted into chocolate-coloured pigment granules, which blocked the small vessels in the haemorrhages.

Before proceeding to the description of these cases I will call attention to the anatomical relations of the vessels of the white matter of the cerebrum, where these haemorrhages are found.

Anatomical Relations of the Vessels Favouring Capillary Stasis.

The pia mater covering the cortex sends delicate walled arteries and veins through the cortex to reach the subjacent white matter; the arteries consist of short and long vessels which, after giving off fine branches to the interlacing capillary network of the grey matter, terminate in a brush of fine arterioles; the short vessels end in this brush just below the cortex; the long penetrate deeper, to end in the corpus callosum and the centrum ovale. Each little artery breaks up into a tree, and forms a separate system of delicate arterioles. Each arteriole ends in a circumscribed area of capillaries, with an emerging vein. These veins do not anastomose. Thrombosis of arterioles or venules would therefore cause capillary stasis and haemorrhage into the brain substance in a circumscribed area, also escape of blood into the perivascular sheaths of arterioles or venules—a condition generally found to occur where there are punctiform haemorrhages. Owing to the thin character of the walls of the arteries, it is difficult to decide whether a vessel in section is an artery or a vein. Punctiform haemorrhages are also found in great abundance in the brain structures supplied by the perforating arteries, especially those in which the opto-striate and lenticulo-striate branches terminate. These vessels give off relatively few branches until they reach their destination in the basal ganglia and internal and external capsules; they then terminate in a brush of delicate walled arterioles. Each vessel supplies, as in the case of the cortical vessels, circumscribed areas of capillaries, and the result of embolism or thrombosis is the causation of similar small limited areas of haemorrhage and softening, which, when numerous, may become confluent. Stasis is favoured also by the narrow lumen of the capillaries of the brain.

* Read before the Pathological Section of the Royal Society of Medicine, February 13th, 1917.

Shell Shock and CO Poisoning.

The brain of a man said to have died from shell shock was handed to me by Professor Keith for examination. The following notes accompanied this brain:

Fatal case of shell shock with burial, from Captain Armstrong, R.A.M.C., No. 7 Mobile Laboratory, B.E.F. Sent on from No. 1 Mobile Laboratory. No. 8 on Captain Armstrong's list.

Brain of man, admitted unconscious, with history of having been buried by shell blowing in parapet. Remained stertorous for two days and died.

Post-mortem Examination.—There is no wound of any kind on his body or head, and no visceral lesion. His ankle on one side was badly "sprained," but there were no fractures. The skull was unfractured, and no fracture of the base could be found. Brain shows multiple punctiform haemorrhages and some slight subpial extravasation. No other particulars.

[Photomicrographs illustrating the appearances presented by the brain in this case have been already published to illustrate my Lettsomian lectures to the Medical Society (1916).]

Having regard to the fact that these punctiform haemorrhages and hyaline thrombosis of vessels were identical in their microscopic appearances to those I had observed in CO poisoning, it occurred to me that the man may have been concussed and afterwards gassed while lying unconscious and buried. (Vide Fig. 1.)

It may be argued that these punctiform haemorrhages were due solely to venous stasis and congestion, but I doubt this, for I have neither observed this condition in the number of cases of death from asphyxia occurring in status epilepticus nor after prolonged seizures of paralytic dementia, although I have examined the brains, macroscopically and microscopically, in a great number of instances.

A letter to me from the Trench War Committee confirmed the possibility of CO poisoning occurring when a large shell burst in a confined space, such as a dug-out or a trench, if incomplete detonation of the explosive occurred. Moreover, it must be remembered that CO is odourless, and may be present in trenches or dug-outs without its existence being known. When a mine is exploded considerable quantities of this gas may be formed, and it may travel through the ground considerable distances.

FIG. 1.—Section of corpus callosum from a case of shell shock, showing punctate haemorrhages. In several of the haemorrhages there is in the centre a small white area of brain tissue with a vessel in the middle of it. Under a high power the small vessel is seen to contain a hyaline thrombus stained pink by Van Gieson method. Magnification, 25 diameters.

In the memorandum on *Gas Poisoning in Warfare* issued by the Director-General, Medical Services, British Armies in France, it is stated in respect to CO poisoning:

The lungs show no abnormal changes in cases of rapid death. Small punctate haemorrhages may be found in the white matter of the brain, and sometimes ecchymosis in the meninges, if the case has been exposed to a concentration of CO sufficient to cause prolonged unconsciousness.

The fact that CO is not found in the blood when the patient is examined, does not prove that death was not due to CO poisoning, for after some hours of exposure to air it cannot be detected, and there is little opportunity to make the test for some hours or even days.

Captain Dunn read a very interesting paper at the Medical Society on epidemic nephritis, in which he showed hyaline thrombosis of the vessels of the alveoli of the lungs and of the glomerular capillaries of the kidney. In these cases he has observed multiple punctiform haemorrhages of the brain, which he attributed to embolism by hyaline thrombi. These haemorrhages present exactly the same appearances as in CO poisoning or gas poisoning. In a letter he has written to me, he states that he has now observed these haemorrhages in four more cases of nephritis, so that their occurrence in the first case was not fortuitous. "They are of quite similar appearance to those I have observed in phosgene poisoning." He asks whether haemorrhages of that type are seen in uraemia.

Major Elliot has been kind enough to send me a copy of a memorandum on five autopsies on cases of poisoning by drift gas ($Cl_2 + CO Cl_2$) in which death took place within seventy-two hours, by Captain H. W. Kaye. In this paper he describes evidence of blood destruction in the spleen. Major Elliot also informs me that Captain H. Henry was the first to describe thrombi in the renal vessels and disagreed with Dunn and McNee when they wished to describe what they saw as renal emboli from the lung.

Examination of the Brain in Gas Poisoning.

I have recently had the opportunity of examining the brains of two cases of gas poisoning, in which gas was employed in an offensive by the enemy; and one is of special interest.

The whole of the white matter is peppered over with small dark spots about the size of a pin's head. These are due to haemorrhages, but microscopic examination shows conditions which I have not found in CO poisoning, nor in other forms of gas poisoning; in fact, I have never seen any condition like this. The red blood corpuscles have been in large measure broken up, and the haemoglobin converted into dark chocolate-coloured pigment granules, which fill the capillaries, arterioles and venules of the white matter of the brain. This is very possibly methaemoglobin, for it is known that exposure to nitrous fumes in concentration will oxidize the haemoglobin, and convert it into methaemoglobin. Phosgene, $COCl_2$, has been used by the Germans; it liberates HCl when it comes in contact with a moist surface; it is very irritating and would cause bronchiolitis, and I am informed by my friend Professor Halliburton that it is possible the free hydrochloric acid would convert the haemoglobin into acid haematin.

Similar appearances were found to those described in CO poisoning—namely, multiple punctiform haemorrhages in the white matter (Fig. 1)—but the blood corpuscles were intermixed with chocolate-coloured pigment granules (Fig. 2). The accompanying drawings illustrate the appearances presented. You may observe a vessel with a hyaline thrombus, stained pink by the fuchsin of the Van Gieson stain, but with a brownish tinge due to the change in the blood pigment.

Possibly, as in capillary fat embolism, we may have embolism by these pigment granules, but, generally speaking, there is definite evidence of thrombus formation, with pigment granules in the thrombus.

Examination with a high-power magnification shows that the smallest vessels are filled with the pigment, which can be seen in the vessels and in the circumscribed areas of haemorrhage as discrete granules packed together. (Fig. 3.)

The specimens show hyaline thrombus formation in the vessel contained in the centre of the haemorrhage or passing to the centre of the haemorrhage; the walls of these vessels are generally so thin as to support the view that they are veins. Some of the small vessels show aneurysmal dilatation. In one section I observed a leash of small arterioles pressed together by the haemorrhage at the side; on one there was an aneurysm

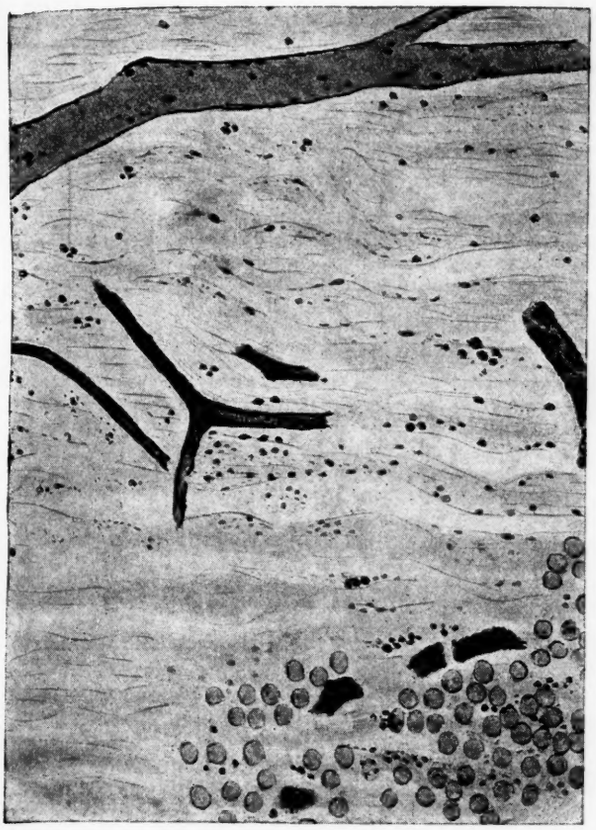

FIG. 2.—Small vessel blocked with pigment, haemorrhage and pigment granules. Above it is a vessel, probably a vein, filled with lightly brown-stained hyaline thrombus. Magnification 250.

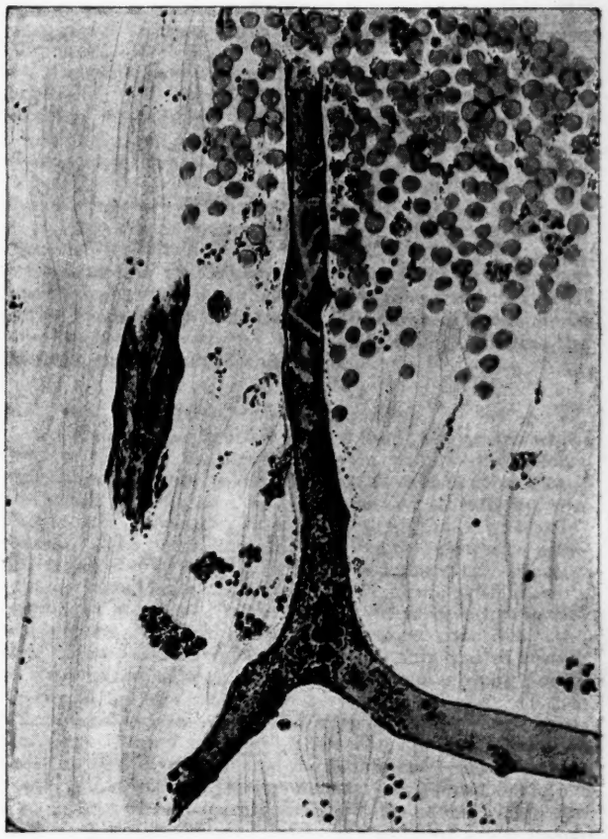

FIG. 3.—Section of optic thalamus showing a vessel bifurcating, packed with pigment granules so closely that the hyaline thrombus can only be seen in one limb. A punctiform haemorrhage with corpuscles and pigment granules is seen above, and on one side there are three small vessels filled with pigment compressed together. Magnification 350.

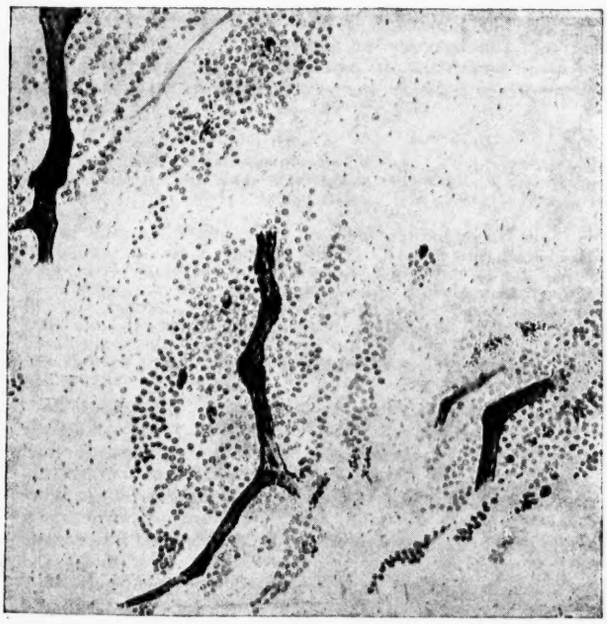

FIG. 4.—Three small vessels filled with pigment granules and hyaline thrombus, in the midst of three punctiform haemorrhages found in the optic thalamus. One of these vessels shows under a higher magnification an aneurysmal dilatation. Magnification 80.

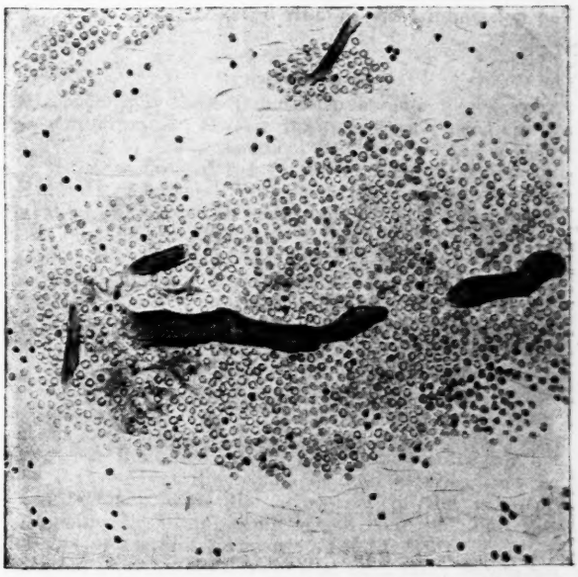

FIG. 5.—Section of subcortical white matter from a case of shell shock and burial, possibly accompanied by gas poisoning. A punctiform haemorrhage is seen with vessel and portions of smaller branches filled with hyaline thrombus. Magnification 150.

filled with pink-stained thrombus. Amidst the corpuscles are numbers of pigment granules. Three such haemorrhages with occluded vessels proceeding to them can be seen (vide Fig. 4). Nearly all the punctiform haemorrhages show a central vessel, surrounded by an area of necrosed brain tissue, infiltrated usually with leucocytes. The whole of this area is stained pink by Van Gieson stain, and it is more or less difficult to make out the wall of the central vessel. Sometimes a capillary filled with a thrombus can be seen running to the central vessel. It may be filled with chocolate-coloured pigment granules probably embedded in a coagulum as in Fig. 2, or the coagulum may be of a pinkish-brown colour, due to the coagulum being stained by the pigment dissolved in the serum. In this, as in all other cases, there is evidence of an inflammatory stasis and excess of leucocytes in the vessels, and often into the perivascular sheath and tissues around.

Clinical and Anatomical Notes accompanying this Case.

Brain.—Surface veins, large and small, distended with dark blue clotted blood (veins of base of skull were in same condition). Section shows thickly scattered blue-black dots throughout the brain, especially in the white matter; this applies also to the cerebellum, and to much less extent to pons and medulla.

No haemorrhage seen.

Patient was admitted ten hours after being gassed, and died sixty hours after admission from bronchiolitis and failure of right heart.

It is unfortunate that the clinical and *post-mortem* notes of this case are so scanty, for it is one of great pathological interest. The right heart failure and bronchiolitis, from which the patient died seventy hours after inhalation of the gas, would undoubtedly account for the venous congestion and stasis noted *post mortem*, and for the thrombosis of the small vessels in the white matter of the brain. The blocking of the capillaries, small arteries, and veins by the chocolate-coloured granules of pigment, especially of the capillaries, would, however, suffice to account for the haemorrhages. In some respects the capillary blockage by pigment resembles the condition found in pernicious malaria, in which disease Bignami and Nazari have described punctate haemorrhage of the white matter of the brain; but I am inclined to believe the principal cause of the haemorrhages is inflammatory stasis and hyaline thrombosis of arterioles, capillaries, and venules, the pigment granules being incorporated in the coagulum.

I received the brain of another case in which the bruises on the body, the haematomata in the right lung, and the other conditions described, all suggest that he had been blown up by a shell and buried, and that the injuries of the brain were due to concussion. The fact that there was no CO detected in the blood does not conclusively prove that he was not exposed, while buried, to CO gas.

Clinical Notes of this Case.

Admitted with diagnosis of shell shock. Purple bruises on arm and leg of right side. Stertorous, unconscious, and during the night before death, constant fits. Lived thirty hours in hospital.

Post mortem: There were two haematomata in the right lung, but no other visceral injury. No haemorrhage of the scalp, and no fractures of the skull. Some slight subpial haemorrhage of the right hemisphere. Fornix destroyed and full of haemorrhages; haemorrhages also seen in corpus callosum. Haemorrhage in both optic thalami; cerebro-spinal fluid tinged with blood. Men admitted with him said he had been buried by a shell. There was no CO in his blood, and the bruising was purple.

Microscopic Examination.—Multiple punctate haemorrhages are seen; hyaline thrombosis of capillaries, arteries, and venules; perivascular sheaths contain blood. (Fig. 5.) Marked evidence of inflammatory stasis. Some of the small veins are filled with blood corpuscles, one-half of which are polymorphonuclear leucocytes, and in the perivascular sheath and tissues around are large numbers of polymorph leucocytes.

Another case, of which full notes were furnished, was due to poisoning from a gas shell barrage. Unfortunately there were no notes of the condition of the reflexes nor the state of tonus of the muscle of the limbs. The clinical notes do not indicate that this patient suffered with pneumonia, nor of any obstruction to the entrance of air to the lungs; there is no statement regarding the cause of the extremely rapid respiration, but the fact that he was given oxygen and diffusible stimulant for the first twelve hours suggests that there was great respiratory embarrassment due to deoxygenation of blood. Later there is a definite statement: there is no evidence of cyanosis and no respiratory obstruction; the oxygen was stopped. But the respiration still continued very rapid—50 to 60.

After some days his condition greatly improved, and the respiration fell even to 28. Then on the last day in the morning he suddenly developed grave symptoms, and in the evening it is noted that he developed marked nystagmus, internal strabismus, and the right pupil was distinctly sluggish and slightly larger than the left. The conclusions and findings are not inconsistent with CO poisoning, but it may have been some other gas or mixture of poisonous gases.

I was unable to confirm the statement of haemorrhage into the pons and medulla. The vessels were congested, but no haemorrhage was found. The cerebral hemispheres were badly preserved, and I was only able to examine the cerebral cortex of the frontal lobes.

Microscopic Examination.

Portions of the frontal cortex and subjacent white matter showing to the naked eye miliary punctiform haemorrhages were taken, and, as in all the other cases, blocked in paraffin, and sections cut and stained by Van Gieson and haematoxylin-eosin methods, also with polychrome. The punctiform haemorrhages appeared in some of the sections to form a circle of circumscribed, discrete, oval or round areas of extravasated blood, with often a section of a vessel in the centre or proceeding to the haemorrhagic area (Fig. 5). In sections stained by the Van Gieson stain the lumen and the thin-walled vessels so seen appear a pale pink, and this presumably is due to the contained hyaline thrombus.

In some vessels red blood corpuscles are seen with abundant fibrin formation—a similiar appearance to that seen in the alveoli in red hepatization; other vessels appear filled with polymorphonuclears and fibrin. Around the central thrombosed vessels of the haemorrhage are seen deeply stained pink areas of necrosed brain tissue infiltrated with polymorphonuclear leucocytes; very often a vessel can be seen filled with blood and extravasated into the sheath, and occasionally the rupture of a thin-walled vessel causing haemorrhage into the perivascular sheath can be seen. This condition of central thrombosis with necrosis of brain tissue around and infiltration of leucocytes is similar to that observed in the CO poisoning from the nickel works, when the patient lived eight days, and is in accordance with what might be expected, seeing that the man lived six days after possible inhalation of the gas.

SUMMARY.

The reason why these punctiform haemorrhages occur in the white matter of the brain in gas poisoning is primarily due to the anatomical condition of the vessels in the white matter of the cerebrum, where the arteries are terminal; each small artery having a separate capillary system, likewise the emerging veins. A tendency to stasis may be brought about in these separate vascular systems by the failure of the heart as a force pump and suction pump, also by those respiratory conditions which lead to right heart dilatation, and interference with the return of blood from the skull. In most cases the two factors are combined. It seems probable, however, that either factor may act independently in causing inflammatory stasis and thrombosis, resulting in multiple punctiform haemorrhages. In the gas case, in which the haemoglobin has been converted into pigment granules, it seems probable that the haemorrhage may be accounted for by embolic occlusion of the capillaries and arteries. It is unfortunate that, with the exception of the case of CO poisoning by illuminating gas, I have not had the opportunity of examining the organs of the body.

It is quite probable that, as in that case, fatty degeneration of the heart, the kidneys, liver, and vessels of the brain would be found to exist.

In conclusion, I desire to acknowledge my indebtedness to my assistant, Mr. Charles Geary; also to Miss Munro and Miss Watson for the assistance they have afforded me, and to the Board of Control for a grant to enable me to give them an honorarium for their services.

Observations
ON
THE PATHOLOGY OF CARDIAC DROPSY.

BEING THE OLIVER-SHARPEY LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, MAY, 1917.

BY
CHARLES BOLTON, M.D., D.SC.LOND., F.R.C.P.LOND.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL; LATE DIRECTOR OF PATHOLOGICAL STUDIES AND RESEARCH, UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

(Abridged.)

LECTURE I.

[AFTER expressing his sense of the honour conferred upon him by the College, Dr. Bolton referred to the work of Lower, Cohnheim, and Starling, explained that the object of his researches was to produce experimentally uncompensated heart disease in order to study the resulting pathological processes, and proceeded as follows:]

Interference with the Filling of the Heart.

Experiment had shown that the heart, with its muscle in all respects intact, can so perfectly accommodate itself to increased work, that it will overcome an increasing resistance opposed to it up to a certain point, and thus maintain the arterial and venous pressures at their normal heights; beyond this point, however, when the heart cannot completely overcome the resistance, it suddenly fails and the circulation comes to an end. One cannot, therefore, experimentally interfere with the heart in its capacity as a force-pump so as to produce a gradual heart failure.

The alternative method of preventing the free diastolic filling of the heart proved successful. The means which I adopted to interfere with this function consists in constricting the pericardium by means of a row of sutures placed in the right side of that structure. This proceeding exercises a certain amount of pressure on the right auricle and roots of the great veins, and interferes with the free expansion of the ventricles. The animals, which in all the experiments to be described were cats, were anaesthetized with ether, and artificial respiration was maintained through an intubation tube during the operation, which was performed under strict antiseptic precautions. On the following day the animal has become dropsical, and this condition gradually increases in degree. The maximum amount of venous engorgement is found towards the centre of the body, the superior and inferior venae cavae and the liver, whilst the periphery appears practically unaffected. The distribution of the dropsy corresponds with that of the venous engorgement; there is ascites and double hydrothorax with marked oedema of the mediastinum, and to a less extent of the retroperitoneal tissue. This oedema may spread along the great veins, more particularly the superior vena cava, so that it extends out of the chest, giving rise to subcutaneous oedema of the front of the neck and chest, and even of the axillae. This distribution of the subcutaneous oedema is evidently influenced by gravity.

The immediate effects upon the circulation of the blood, as measured by arterial and venous manometers, I found to be the same as in Cohnheim's experiment. The arterial pressure at once fell to varying degrees in proportion to the tightness of constriction, and the venous pressure in all parts of the body, head, feet, and portal vein, at once rose also to varying degrees. On observing the experiment for an hour or more I was, however, surprised to find that the venous pressure in all parts of the body gradually fell until it returned to the normal level, whilst the arterial pressure still remained at the low level to which it had fallen. On the following day, when dropsy was present, I was again surprised to find that the venous pressures were still normal or a little raised, and that the arterial pressure had now usually regained its normal height.

When I made these observations we had no idea what the arterial pressure was in cardiac dropsy, but three years later H. J. Starling published a series of clinical observations in which he showed that in uncompensated heart disease with dropsy the arterial pressure was normal, except in cases associated with arterial or renal disease when it was raised. The distribution of the subcutaneous oedema in the dependent parts of the body in cardiac dropsy is due to the upright position of the patient, so that the venous engorgement of the liver and veins of the central parts of the trunk is relieved by gravity at the expense of the legs. When it is necessary to tap the subcutaneous tissues, it is a common practice to let the patient sit up in a chair so as to drain the fluid into the legs. The changes are essentially the same as in these animal experiments, and the differences are entirely due to differences of position.

I concluded that the venous pressure fell owing to dilatation of the large veins of the trunk and of the liver, so that blood accumulated in the central parts, whilst it was abstracted from the periphery. In support of this supposition was the visible distension of these veins and the liver, and also the fact that, when the venous pressure had fallen to the normal level after its initial rise, relaxation of the pericardium brought about a further fall below the normal. The dilatation was due to the raised venous pressure and to a nutritional loss of tone in the vessels of the congested area. The dropsy was produced in this central area of the body whilst the capillary pressure was about the normal, and therefore I concluded that the oedema was primarily due to some alteration in the capillary wall.

From these observations it was quite evident that certain adaptive changes had occurred which were worthy of closer study, but the method of pericardial constriction was not a satisfactory one to employ for a large series of experiments, because so many animals died from the operation, as it was quite impossible to gauge the amount of constriction.

Obstruction of Both Venae Cavae.

I therefore employed another method for producing the same result. This consisted of simultaneous obstruction of the superior and inferior venae cavae. The constrictions were applied immediately above and below the right auricle, the azygos vein being ligatured. The average diameters of the veins were obtained by washing out the blood and distending them with gelatine at the normal venous pressure. After the gelatine had set the vessels were cut out and measured. The veins were constricted to varying degrees by tying round them short pieces of split rubber catheter of known diameters. I found that constriction of both veins led to a condition of dropsy precisely similar in its distribution to that produced by pericardial constriction, and that the effects upon the venous and arterial pressures were also the same.

Obstruction of Inferior Cava Alone.

An incomplete obstruction of the inferior vena cava alone produces no effect whatever unless the vein is narrowed down to three-fifths of its normal diameter; the animal survives, and develops dropsy. Obstructions greater than this produce similar results, but narrowing down below two-fifths of the diameter of the vein kills the animal as in complete ligature. One is thus able to guarantee the survival of any animal by using a rubber tube of 2.5 to 3 mm. in diameter, and also that the animal will develop dropsy. The ascites is rapidly produced, measurable amounts being present after two hours, and large amounts during the first few days; it then slowly increases up to the third or fifth week, as a rule, but sometimes for a longer period; it then slowly subsides with the establishment of anastomoses, and has disappeared in from two to six months. Now and then it may persist longer than six months. In addition to ascites there is commonly a little oedema round the inferior vena cava behind the peritoneum, and exceptionally it may extend from this locality down the iliac veins to the groin; here it forms a bag of fluid, which further extends along the anterior abdominal subcutaneous tissue, and down the thigh to the knee. This extension is due to gravity, the position assumed by the animal favouring this distribution of the subcutaneous fluid.

The appearance of oedema at a certain point in the subcutaneous tissue does not necessarily imply that it is formed in this position, because fluid is able to diffuse itself in the areolar tissues much in the same way as subcutaneous emphysema; in this form of diffusion gravity plays an important part.

Consequent Pressure Changes.

We have now to consider the pressure changes in the various parts of the circulatory system as a result of this obstruction of the inferior vena cava.

Immediate Changes.

A gradually increasing constriction produces no effect whatever on the pressures until the vein has been narrowed to three-fifths of its diameter, when the pressure at the lower end of the inferior cava rises by about 30 or 40 mm. $MgSO_4$ solution. The normal pressure in this situation is about 90 to 100 mm. $MgSO_4$, so that the rise is about one-third of the normal. The solution was made of a specific gravity of 1046, so that it is one-thirteenth the weight of mercury. A rise of 30 to 40 mm. therefore represents about 2 to 3 mm. Hg. At exactly the same point the arterial pressure falls by 20 mm. Hg or more owing to deficient filling of the heart. Constrictions greater than 3 mm. produce somewhat greater depressions in the arterial pressure curve and greater rises in the venous, and complete ligature of the vein causes the arterial pressure to sink to about 30 mm. Hg above zero, whilst the venous pressure behind the obstruction runs up rapidly to over 200 mm. $MgSO_4$. To cause a high degree of venous pressure, therefore, the vein must be completely occluded. The rise of venous pressure is not limited to any portion of the venous area drained by the inferior vena cava, but extends back to the venous radicles at all points. Thus a cannula placed in a vein of the foot shows precisely the same increase of pressure in the manometer, and the rise of pressure is also propagated through the liver into the splenic vein to the same degree. On the other hand, the pressure in the superior vena cava and its tributaries falls, the fall amounting to about 10 or 15 mm. $MgSO_4$ solution.

We see, thus, that there is a redistribution of the amounts of blood in the different parts of the body; by its accumulation in the inferior vena cava and its tributaries it has been abstracted from the rest of the venous system and the arteries. The capillary pressure in all the parts drained by the inferior vena cava rises, whilst the velocity of the blood is diminished. This rise we have seen to be on the average about 2 to 3 mm. Hg, so that, if the normal capillary pressure were 30 mm. Hg, after obstruction of the vein the pressure would stand at 32 to 33 mm. Hg. This is a comparatively insignificant rise. We must, however, remember that the height of the capillary pressure depends not only upon the rate at which blood is leaving the capillaries, but also upon the rate at which it is being supplied to them. If the arterial pressure remained normal and these vessels contained the normal amount of blood, the capillary pressure after obstruction would stand at the height indicated above, but blood is abstracted from the arteries and the pressure in them falls; less blood than normal is therefore supplied to the capillaries, so that for this reason the pressure within the latter is not raised to the level indicated by the height of the venous pressure. Exactly what lessening of effect is produced by the fall of arterial pressure it is impossible to say; we can only conclude that the capillary pressure is raised, but to a smaller extent than one would expect from the height of the venous pressure, and in any case the rise is trifling. The fall of venous pressure in the superior vena cava and its tributaries, together with the fall of general arterial blood pressure, naturally results in a fall of capillary pressure in these parts.

These are the immediate effects of narrowing of the inferior cava, and they do not last for very long, because the venous pressures in all the parts of the body behind the obstruction commence to fall gradually, and, if the animal be kept under observation for an hour or more, it will be found that the venous pressures in the inferior vena cava itself, in the portal vein, and in the foot eventually reach the normal level or a point very near it. The venous pressure in the head, however, at the end of this time still remains at the low level it had immediately assumed on obstruction of the vein. The arterial pressure in all cases remains at the level to which it had fallen on the occurrence of obstruction, or it may be lower still. The higher the pressure in the inferior cava the quicker it falls to the normal level.

This fall of venous pressure is due to precisely the same cause as we have seen to be operative in constriction of the pericardium—namely, dilatation of the veins and capillaries of the liver more especially, but also of the portal system, and of the inferior vena cava and its immediate tributaries.

This distensibility of the abdominal vessels is responsible for a further depletion of the fore part of the body, and the hind limbs and peripheral portions of the abdomen now share in this depletion. Owing to the increased capacity of a part of the circulatory system, the pressures in all parts of the system naturally fall, the blood volume remaining normal. The venous pressures in all parts behind the obstruction being normal or thereabouts, and the arterial pressure low, it naturally follows that the capillary pressure is subnormal in these parts, except in the liver, where it is about normal. The capillary pressure in the fore part of the body falls lower than it was before.

This is the condition of the circulation when dropsy commences; an increased output of lymph occurs in the plethoric areas giving rise to ascites and some degree of retroperitoneal oedema. The ascitic fluid comes from the viscera, especially the liver, and the oedema from the capillaries of the short lumbar veins directly opening into the inferior cava. The veins of the abdominal wall and the hind limbs actually contain less blood than normal. Increased absorption of fluid occurs in these regions and also in the fore part of the body owing to the deficient filling of the vessels and the resulting low capillary pressure.

The output of lymph in the plethoric areas is thus balanced by the absorption of fluid in these depleted areas, the blood volume remaining normal. It is well known that such an absorption always occurs, because Lazarus-Barlow has shown that, when a part is rendered plethoric and oedematous, the specific gravity of the tissues in the anaemic areas of the body rises, showing that fluid has been absorbed from the tissues into the blood.

The capillary pressure being normal or thereabouts, the increased output of lymph is entirely conditioned by the state of the vessel wall. Exactly what this state is one can merely surmise, but it can hardly be doubted that the normal nutritional exchanges of a part in which there is such a high degree of stasis of blood are seriously interfered with. So far as we can see at present the fault is primarily a nutritional change in the capillary wall, and what part is played by filtration at the normal capillary pressure, or by osmosis resulting from altered tissue metabolism, must at the present moment be left an open question.

All the changes which I have hitherto described occur during the first few hours after the vein is obstructed, and we have now to consider what later alterations in the pressures take place. For this purpose a series of dropsical animals was examined at various intervals after the operation until the dropsy had disappeared.

Later Changes.

The later alterations occur in two stages, and they are due to two distinct causes:

1. The first stage is characterized by a rise of venous pressure, approximately to the height from which it had fallen, and a rise of arterial pressure to about the normal level.

2. During the second stage the venous pressure rises to a high degree, the pressures which I have recorded being comparable to those following complete ligature of the vein. The arterial pressure still remains at the normal level.

First Stage: Restoration of Venous and Arterial Pressure.

The alterations in the circulation at the first stage are usually completed in a few hours, nearly always within twenty-four. In one case on the fifth day, however, I have found a normal venous and subnormal arterial pressure, although the animal had 100 c.cm. of fluid in its abdomen. At this stage the venous pressures in the portal vein and inferior vena cava gradually rise until they attain the heights at which they stood immediately after the operation. The pressure, however, in the veins of the legs always remains relatively lower than that in the central part of the trunk. This pressure does not rise above the normal, and unless the pressure in the trunk is very definitely raised it is subnormal. There is, therefore, a relative alteration in these two pressures; the venous pressure in the trunk is always relatively raised, and that in the legs relatively lowered. The arterial pressure rises to the normal, varying somewhat with the venous pressures

in the trunk. The venous pressure in the territory of the superior vena cava still remains at the low level it immediately assumed when the operation was performed. This again shows, as we saw before, a relative plethora of the central parts of the trunk, and depletion of the peripheral parts of the circulation.

The Cause of this Alteration in the Venous and Arterial Pressures.

In the normal animal the arterial pressure is kept at a constant level in order that the capillaries may be supplied with an adequate flow of blood. This especially applies to the brain, so that the medulla may receive its normal supply of oxygen. Whenever the arterial pressure falls, so that the vasomotor centre does not receive its proper supply of blood, it is excited to action and the blood pressure rises. One would expect, therefore, that the low arterial pressure in the dropsical animals would excite the vasomotor centre to action so as to produce a general arterial constriction, with its resulting rise of arterial pressure and a greater flow of blood to the brain. It might, however, be argued that in these cases absorption of fluid had overbalanced output and brought about hydraemic plethora, and that this increase in the total blood volume was the cause of the raised vascular pressures. I have, however, shown that at this stage of the disease there is no increase in the blood volume. It must therefore be by vasomotor constriction, which automatically occurs by excitation of the vasomotor centre as the result of anaemia of the medulla, that the arterial pressure becomes raised to the normal. Naturally, this result varies in different animals, according to their power of recovery after a severe operation. In some cases it rapidly occurs, so that the arterial pressure rises to its originally normal level in three or four hours, whilst in others the pressure still remains low on the following day or even later. It was shown by Bayliss and Starling that stimulation of the splanchnic nerves not only raises arterial blood pressure, but also the pressure in the inferior vena cava by 20 to 30 mm. $MgSO_4$ solution.

Vascular constriction, therefore, fully accounts for the rise of arterial and venous pressures. It is an adaptive mechanism enabling the animal to compensate as far as possible for its changed circulatory conditions. The rise of arterial pressure ensures a normal supply of blood to the brain, and the raised venous pressure increases the velocity of blood through the constriction, so that the maximum amount possible may reach the heart and be distributed to the tissues.

These alterations in venous and arterial pressures in their turn affect the capillary pressure. The rise of venous pressure results in a rise of capillary pressure in the central parts of the trunk, but this rise is minimized by the arterial constriction which cuts down the supply of blood to the capillaries, so that it is doubtful whether the capillary pressure rises above its normal level except in the liver, where it must go up, because both portal and inferior cava pressures are raised. The capillary pressure in the legs, abdominal wall, and fore part of the body is subnormal, and increased absorption continues in these regions as before. The alteration in pressures does not obviously affect the output of lymph, because there is no distinct relation between the height of the venous pressure in the trunk and the amount of ascites present.

Second Stage: Rise of Venous Pressures to a Great Height.

In these animals the venous pressures are very high after the first week and occasionally during this period, but it is not until the end of the second week that they attain their maximum heights. The maximum pressures occurred from the second to about the eighth week. The pressure in the portal vein followed that of the inferior cava, and was raised to about the same proportionate extent. The venous pressure in the hind limbs was always raised above the normal after the second week, but to a less relative extent than that of the inferior cava. Although all the venous pressures have gone up, there is still the same alteration in the pressure levels as described before, the venous pressure in the trunk being relatively more raised than that in the hind limbs. This occurrence is, therefore, a constant feature at all stages of the disease. Another constant feature refers to the pressure in the superior vena cava, which in all cases was still below its normal level, as immediately after the vein was constricted. The same disproportion in the distribution of the blood as we saw to occur in the early stages is, therefore, still present. There is a relative plethora of the central portion of the trunk, and relative anaemia in the peripheral parts. The arterial pressure was normal, although in four cases it was a trifle higher than usual. The capillary pressures are raised in all parts behind the obstruction, but to a less relative extent in the hind limbs than in the trunk; those of the fore part of the body are below normal.

With regard to the influence of this high venous pressure upon the production of dropsy, it may be definitely stated that there is no constant relation between the height of the venous pressure and the amount of ascitic fluid present, and that, moreover, during the subsidence of the ascites and after it has disappeared the venous pressure still remains high. These observations upon the venous pressures in the later stages of the disease, therefore, agree with those made in the earlier stages in showing that a high capillary pressure is not the primary cause of the dropsy and is not necessary for its production. Neither is the presence of a high pressure capable of preventing the subsidence of the dropsy. It is true that the period of highest pressure corresponds with some increase in the ascitic fluid, although an examination of individual cases does not bring out this point, because the ascites begins to subside at different times in different animals whilst the pressure is still high. So that when once oedema is being produced a high capillary pressure will increase it, although the two conditions may be dependent upon some other factor.

It seems quite clear that some new factor must have been introduced to cause this additional rise of venous pressure, which in half the cases becomes more than double its original height. Such a factor can only be an increase in the total quantity of the blood, and this leads us to inquire whether absorption in the anaemic parts of the body may not have eventually overbalanced output in the plethoric parts and led to a condition of general plethora; and, further, if the total blood quantum is increased, what is the nature of the increase, and what is its effect upon the production of lymph?

Establishment of Plethora.

That plethora occurred in certain forms of dropsy had been suggested by clinicians for many years before Cohnheim definitely opposed the idea. He considered it as proved that a lasting pathological increase in the blood quantum could not occur, because it had been shown that, when the blood volume of the dog was increased by transfusion of large amounts of blood, the excess was disposed of in a relatively short space of time.

I am aware of one case only in which the blood volume of a patient with uncompensated heart disease was actually estimated. This was an observation of Lorrain Smith, in which he found an increase in the blood volume. I have estimated the blood volume of twenty-five dropsical cats at all stages of the disease. The volume of the blood was obtained by the washing out method. The blood volume of a cat weighing 2,500 grams is about 100 c.cm. Ten estimations were made on cats during the first week. In five cases the blood volume was normal, in three it was diminished by 6, 9, and 16 c.cm., in two it was increased by 4 and 7 c.cm., so that during the first week the blood volume is normal or decreased; an increase may occur at this early date, but it is very slight and unable to affect the venous pressure. This period, it will be remembered, is that during which the venous pressure is raised by vasoconstriction alone. Four estimations were made during the second week. The blood volume of the animal on the eighth day was diminished by 10 c.cm. and the other three increased by 6, 15, and 28 c.cm. Towards the end of the second week, it will be remembered, the venous pressures tend to rise and afterwards remain uniformly high. Between the second and eighteenth week eleven estimations were made, and all showed an increase. The increases at this period were on the whole much greater than those of the second week. The lowest figures were from 7 to 18 and the highest from 23 to 47 c.cm. Considerable increases in the blood volume thus occurred during the period when the venous pressures were uniformly very high. It seems justifiable to conclude that about the second week absorption of fluid overbalances

output and leads to an increase in the total blood volume. This causes a rise of venous pressure in the parts of the body behind the obstruction, but the quantity of blood in the previously anaemic area is not made up to the normal, and the pressure in this region is subnormal. Absorption, therefore, continues and keeps the blood volume above the normal. This implies a fairly rapid circulation of fluid into and out of the blood, and that this actually happens we shall see later in speaking of the extravascular circulation of the lymph.

This rapid and constant intake of fluid, therefore, seems to be the actual cause of the plethora, otherwise, as in Cohnheim's experiment, the excess of blood would be rapidly disposed of and the blood volume return to the normal. The condition of plethora in these experiments is not analogous to the artificial production of plethora by injection of fluid, because its maintenance depends upon a constant intake of fluid. Fluid is also rapidly leaving the vessels as ascites, but, as I shall show later, absorption of the ascites is constantly occurring into the blood so that by this rapid and constant circulation of fluid the volume of blood is permanently increased. During the first two weeks the blood volume bears no relation to the amount of ascitic fluid. The formation of ascites is very active from the first day and the fluid accumulates in large quantities during the first week. During this period the volume of blood is usually normal or even diminished, and as a fact the amount of ascites is commonly large when the blood volume is small. The increase in blood volume can in no way, therefore, be said to be the cause of the dropsy, because the essential cause or causes are at work before the blood increases in volume. The increase in blood volume must, therefore, be looked upon as a secondary phenomenon and due to an effort of the animal to make up its normal quantity of blood in the anaemic areas, and to replace the fluid lost as dropsy. At the same time it may be a contributing factor and assist in increasing an already existing dropsy. This appears to be the case, for the dropsy tends to increase about the time the volume of the blood increases, and after the second week is passed the amount of ascitic fluid varies more or less directly with the blood volume. However this may be, after the fifth week, when the dropsy is subsiding, the blood volume still keeps high. So that an increase in the blood quantum is unable to prevent the disappearance of the dropsy.

A further effect of this increase in the volume of the blood and the resulting high venous pressure is seen in the liver. In the early stages we have seen that the pressure in it is very little above the normal, and the capillaries are dilated moderately; in the stage of plethora, however, the pressure in this organ is considerably raised, the capillaries are dilated into sinuses, and the liver tissue atrophies.

It is obvious that if the total amount of fluid in the body is increased water must have been retained. The sources from which the blood derives fluid in order to increase its volume are the alimentary canal and the extravascular tissues. The daily volume of urine is diminished to about one half during the first week, after which it becomes normal, with a tendency towards an increase in the later stages. Less fluid is, however, consumed during the first few days, and, as a fact, the amount of fluid taken in and that excreted run parallel throughout the disease. Taking into account all sources of error involved in the method employed, it appears that there is retention of fluid in the body during the early period of oedema formation and increase of the blood volume, and a slight loss of fluid during the subsidence of the dropsy. That the excretory capacity of the kidneys in these animals is not materially interfered with is proved by the readiness with which they respond to an increase in the available amount of fluid presented to them to excrete. The retention of water appears, therefore, to depend primarily upon the circulatory processes at work, which are causing the dropsy.

The fluid which is absorbed directly into the capillaries from the extravascular spaces, so far as is known at present, consists of water and salts only. There are no direct observations to prove that protein is absorbed by the capillary wall.

Changes in Haemoglobin Content.

During the past twenty years or more the condition of the blood in uncompensated heart disease as regards its content of water has been investigated from time to time. The methods employed have been either that of ascertaining the total solids of the blood, of measuring its specific gravity, or of ascertaining the percentages of haemoglobin and red corpuscles which it contained. Many of these clinical observations agree that in cardiac dropsy hydraemia is present, but others differ from them in finding the haemoglobin content of the blood normal or even increased.

I have made 182 haemoglobin observations on 52 dropsical cats, and have estimated the total solids of the blood, serum, lymph, and ascitic fluid of 11 cats at various stages of the disease. These observations have shown that on some day during the first week the percentage of haemoglobin in the blood begins to decrease. This never occurs on the first day after the operation, every case examined at the end of twenty-four hours showing a normal or slightly increased percentage. It may commence on the second day, but only in about one out of six cases. Two-thirds of the cases show a commencing fall of the haemoglobin percentage on the third day, and the remainder on the fourth, fifth, and sixth days. One case showed a normal percentage on the eighth day. With this last exception every case out of seventy-six estimations, conducted from the seventh day to the end of the fifth week, showed a decrease in the haemoglobin percentage. After this period, although the blood volume remains increased, the haemoglobin percentage rises, becoming normal or slightly above this level in most of the cases during the next few weeks.

On comparing the haemoglobin percentage with the blood volume it appears that the period of continuous increase in the blood volume corresponds with the period of continuous decrease in the haemoglobin percentage, and that after this, although the blood volume remains higher than normal, the haemoglobin percentage commences to rise. It is therefore evident that the decrease in the haemoglobin content of the blood is due to a dilution of the blood, and not to a decrease in the total amount of haemoglobin. The rise in haemoglobin percentage whilst the blood is increased in volume represents an effort on the part of the animal to restore this percentage to the normal. This it succeeds in doing sometimes whilst the ascites is present, and sometimes after it has disappeared.

Here is to be found the explanation of the discrepancies which have occurred in clinical observations on the haemoglobin content of the blood. The alterations in the haemoglobin percentage and the corpuscular content of the blood pass through very definite stages, so that a normal, an increased, or a diminished percentage in either of these is found at different times in the same individual. The formation of new blood corpuscles is probably due to the diminished oxygen tension of the blood. This is brought about in uncompensated heart disease by the diminished velocity of the blood and the cyanosis.

Changes in Blood Plasma.

We have now to discuss the changes which occur in the blood plasma. The total solids in the ascitic fluid amount to about 5 or 6 per cent., and occasionally 7, being slightly less than those of the lymph in any given animal. A considerable amount of protein is thus rapidly lost by the blood, the diminution in volume of the latter being made up by the absorption of water. There results, therefore, in the earliest stages a simple hydraemia, in which the total volume of the blood is normal, but the percentage of water in the plasma is increased. The total solids of the blood and serum are diminished, but the haemoglobin percentage is normal, showing that the total blood volume is normal.

We know very little about the formation of the blood proteins beyond the fact that they are formed fairly rapidly. My observations on the total solids of the blood and the serum fully bear out this point, because I have found that after the first day, whilst the total solids of the blood are uniformly and considerably diminished, together with the percentage of haemoglobin, the solids of the serum are only a little less than normal. This means that the animal rapidly makes up the proteins of its plasma, so that the preliminary hydraemia tends to diminish. After the fifth week has passed, and the excessive lymph production is falling off, the total solids of the serum become absolutely normal.

We must therefore distinguish several phases through which the blood passes: A simple hydraemia, the total

volume of the blood being normal or even diminished; a plethora in which the plasma is to some extent hydraemic and the percentage of corpuscles diminished; a true plethora in which the plasma is normal in composition and the percentage of corpuscles has also reached the normal. The proteins of the blood are thus made up much more rapidly than the corpuscles, so that one cannot say that hydraemic plethora exists merely because the corpuscles are diminished in percentage. Were it not for the constant absorption of water and output of protein, tending to keep the blood hydraemic, the proteins of the blood would, no doubt, be found normal in quantity from an early date. We have already seen how the organism attempts to compensate for the anaemic condition of certain portions of its vascular system by vaso-constriction, whereby it ensures that the maximum amount of blood possible reaches the tissues. It has only a certain quantity of available blood at its disposal, and with this it is unable to supply the tissues with their normal amount. A further series of events is therefore initiated whereby the blood is first increased in quantity, and then becomes normal in quality.

SUMMARY.

1.

The increased output of lymph giving rise to cardiac dropsy is one of a very definite series of events following the occurrence of failure of the heart in its capacity as a pump. These events may be grouped into the following stages:

Stage I.—Accumulation of blood in the veins, with a moderate rise of venous and capillary pressure in all parts. Abstraction of blood from the arterial system with a fall of arterial blood pressure.

Stage II.—Dilatation of the veins and capillaries of the central parts of the body, with a fall of venous and capillary pressure to normal or thereabouts. This leads to increased congestion of the central parts and anaemia of the peripheral parts of the body, in which the venous and capillary pressures fall below normal. Increased output of lymph in the congested area giving rise to dropsy. Increased absorption of water in the anaemic areas, which balances the loss of fluid by the blood. Simple hydraemia results.

Stage III.—Vasomotor constriction resulting from anaemia of the medulla causing:

1. A rise of arterial pressure to the normal.
2. A moderate rise of venous and capillary pressure in the central parts of the trunk.

The venous and capillary pressures of the peripheral parts remain subnormal, or may become normal.

Stage IV.—Hydraemic plethora is established and raises the venous and capillary pressures in the central portions of the body to a great height. There is still a relative anaemia of the peripheral portions, although to an increasingly limited extent, as the congested area spreads peripherally.

Stage V.—The ascites and hydrothorax increase in degree and the oedema spreads in the areolar tissues peripherally, as the congested area encroaches upon the anaemic regions. True plethora is established.

2.

The abnormal output of lymph leading to dropsy is primarily conditioned by the nutritive state of the capillary wall, and is increased by the general plethora and consequent high capillary pressure.

3.

In uncompensated heart disease in man the central portions of the trunk are relieved by gravity at the expense of the legs, which become included in the congested area. The dropsical area spreads up the legs to the abdominal wall, thus encroaching upon the anaemic area from below upwards.

BIBLIOGRAPHY.

Bayliss and Starling: *Journ. Physiol.*, 1894, vol. xvi, p. 171.
Bolton: *Journ. Path. and Bact.*, 1903, vol. ix, p. 67. *Proc. Roy. Soc.*, London, 1907, B, vol. lxxix, p. 267. *Journ. Path. and Bact.*, 1909, vol. xiv, p. 49. Ibid., 1916, vol. xx, p. 290.
Cohnheim: *Lect. Gen. Path.*, New Syd. Soc. Trans., London, 1889, vol. i, pp. 21, 513, 423.
Hammerschlag: *Zeit. f. klin. Med.*, Berlin, 1892, Bd. xxi, S. 475.
Lazarus-Barlow: *Phil. Trans.*, B, 1894, vol. clxxxv, p. 779.
Lorrain Smith: *Trans. Path. Soc.*, London, 1902, vol. liii, p. 136.
Lower: *Tract. de Corde*, etc. Edit. sex., London, 1728, p. 127.
Starling, E.: Arris and Gale Lectures, *Lancet*, 1896, vol. i, pp. 1267, 1407. Ibid., 1897, vol. i, pp. 569, 723.
Starling, H. J.: *Lancet*, 1906, vol. ii, p. 846.

APPARATUS FOR TREATMENT OF FRACTURES OF THE FEMUR AND OF THE LEG.

BY

DR. V. SOUBBOTITCH,

SURGEON-COLONEL, SERBIAN ARMY.

THE apparatus which I am now describing permits the treatment of fractures of the femur and of the leg in a position of extension as well as of flexion of the hip and knee-joint. In the flexed position the action of certain muscles often becomes less disturbing, while the relaxation of these muscles decreases the force required for successful traction. Especially for certain cases of high and low fractures of the femur, the treatment by flexion offers real advantages. I have therefore devised an apparatus for the treatment

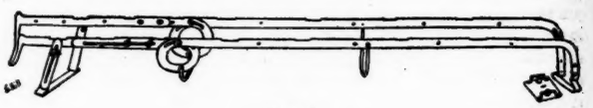

FIG. 1.

of fractures of the femur in extension or in flexion, which permits a change of position when required, without the necessity of first removing or displacing the apparatus, which, moreover, allows the simultaneous treatment of fractures of the femur and of the leg. It is made of metal, and consists of two lateral splints, united above by a posterior arc, which has, in its internal part, a special

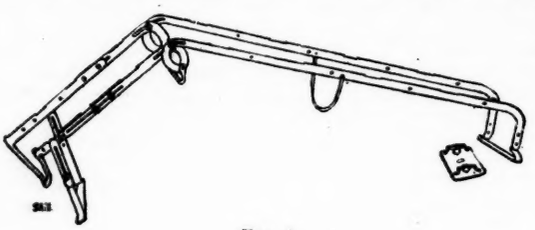

FIG. 2.

curve similar to that in M. Delbet's apparatus. This special curve provides a good leaning on the ischium, a point well adapted to sustain a certain amount of pressure. At the further end the two splints are united by a transverse bar, in the middle of which is applied a dynamometer, which regulates the strength of the traction exercised by means of diachylon, network, plasters

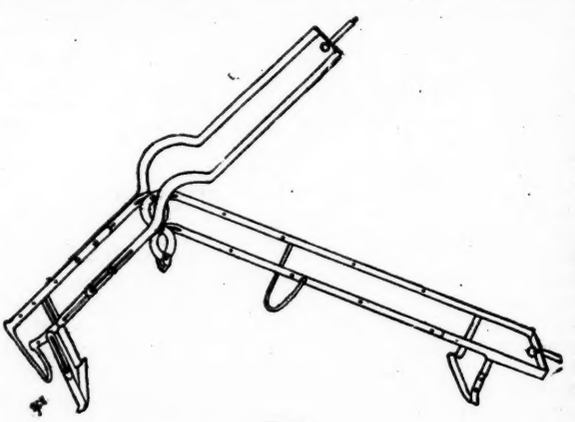

FIG 3.

Finochietto's stirrup, etc. The dynamometer can be replaced by elastic tubes or other springs, etc. The apparatus consists of two parts, articulating in a special manner corresponding to the knee-joint; the upper part supporting the femur, and the lower part the leg. In order to give the appliance more rigidity, two transverse arcs unite the two splints, and a large support at each end gives additional stability to the apparatus, which should be placed upon a firm base. Linen or metal straps form the hammock which carries the limb.

A number of holes in the splints facilitates the suspension of the apparatus, the femoral part of which can be

elongated as required. With the apparatus in rectilinear position (Fig. 1), it is possible to put the limb in extension, and to exercise upon it graduated traction with counter-pressure upon the ischium—as may also be obtained, of course, with other apparatus. For flexion, the appliance has an articulation corresponding to the knee-joint in such a manner that it may be easily transformed into a double-inclined plane (Fig. 2). The distance from the tuberosity of the ischium to the popliteal hollow becomes appreciably longer as the leg passes from the position of extension to that of flexion. In the medical literature of such appliances this fact has, so far as I am aware, not yet been noted, when it is necessary to accommodate the length of the appliance to the varying distance of the tuberosity of the ischium from the popliteal hollow.

The lateral splints supporting the femur and the leg, under the knee, are each semi-elliptically curved back below, and at the point of their lower junction is placed the axis around which the bending movement in adaptation to the knee-joint is produced. By means of this arrangement an elongation of the femoral part of the apparatus follows automatically the process of flexion.

When, as a consequence of flexion, the upper posterior arc, on being lowered, loses contact with its point of pressure upon the ischium, it is necessary, in order to maintain this contact, that the upper support of the apparatus should be capable of being either lengthened or shortened, at will, according to the degree of flexion. Of course, in case of fractures necessitating the abduction of the limb the apparatus must be placed in this position. By transverse tractors attached to the splints, it is possible to modify, when required, the position of the fragments.

If when the limb is in flexion traction is to be exercised upon the femur, another arc may be added to the apparatus, securely fixed in axial prolongation on the two femoral splints (Fig. 3). In applying elastic traction (dynamometer), which in the flexed position of the limb can be moderated, the counter-pressure is always upon the tuberosity of the ischium. Different tractions can also be simultaneously applied on the leg. With this apparatus it is possible to treat fractures in suspension and in different positions of the limb. Free access to wounds and adjacent regions is given; movement of the knee and massage of soft parts are also possible, the fracture remaining fixed. Removal of the patient also is rendered easier. For longer journeys a better immobilization can be obtained by applying a long splint from the armpit to the foot, and by securing the splint to the apparatus and to the thorax.

The application of this apparatus is not possible when there are lesions in the region of the ischium.

GLYCERINE AND ANTISEPTICS.

BY

HELEN PIXELL GOODRICH, D.Sc.,

RADCLIFFE INFIRMARY, OXFORD.

AN interesting note in the BRITISH MEDICAL JOURNAL of May 5th, pointing out the possibility of using substitutes for glycerine for some purposes, in view of the great scarcity of this drug, makes it desirable to publish some of my recent experimental results, which show that its presence more or less completely destroys the antiseptic power of such useful substances as thymol, phenol, boracic acid, mercuric chloride, etc., in aqueous solution.

It is a well-known fact that many antiseptics, inorganic as well as organic, are much more soluble in glycerine than in water.

Approximate Solubility at Ordinary Temperatures.

Thymol: 0.06̇ per cent. in water; 0.526 per cent. in glycerine.
Phenol: 7.7 per cent. in water; 350 per cent. in glycerine.
Mercuric chloride: 5.26 per cent. in water; 61.5 per cent. in glycerine.
Boracic acid: 4 per cent. in water; 25 per cent. in glycerine.

There is therefore no doubt that in a mixture of water and glycerine more of the above substances will dissolve than in pure water; for example, in a mixture of equal volumes of water and glycerine about five times as much thymol will dissolve as in pure water. However, the resulting solution has no better antiseptic power than the aqueous solution containing only a fraction of the amount of thymol, as already recorded in my recent paper on mouth-washes. The same is the case with boracic acid: a saturated solution in water will kill all the organisms in a thin film of *Staphylococcus pyogenes aureus* in just over one hour, whereas a saturated solution in water and glycerine containing more than four times as much boracic acid requires about six hours.

Hitherto it appears to have been assumed by pharmacologists that solutions in glycerine were necessarily more antiseptic than the more dilute aqueous solution, and further, statements such as the following, are liable to be misleading: "Glycerine is largely used in pharmaceutical preparations as a solvent, and, being an antiseptic, it also acts as a preservative." (Squire, 1916, p. 658.) It was Sternberg who included glycerine, up to 1 in 4 dilutions, among feeble antiseptics, but, as shown below, even water compares well in disinfecting power with 50 per cent. glycerine. Pure glycerine easily kills protozoa and other animals, but here it acts by osmosis, for it is well known to extract water from tissues. Many bacteria are much less susceptible to fatal effects from drying, and may consequently remain alive in glycerine for hours. Dilute solutions are not even preservative; in fact, up to 8 per cent., glycerine is so beneficial to certain bacteria as to be added to media for growing them.

The experiments mentioned below were carried out in the same way as those described in my recent paper in this JOURNAL (April 14th), but with a standard culture of *S. pyogenes aureus*. The glycerine used was in the liquid form (specific gravity 1.26), pure and perfectly sterile.

To destroy all the organisms on a cover-slip film pure glycerine required approximately eight hours; mixed with water in equal volume it required more than twenty-four hours, after these hours giving considerably more growth than the control which had been in tap-water for the same time. For the following experiments a stock solution of the antiseptic was made in water, and this was diluted as required with an equal volume of water or glycerine:

Times required to Destroy all the Individuals from a Standard Culture of S. pyogenes aureus Contained on a Thin Film on a Coverglass.

Phenol:
3.3 per cent. solution in water required less than ½ minute.
3.3 per cent. solution in water and glycerine required more than 1 minute (between 1 and 5).

Mercuric Chloride:
0.005 per cent. solution in water required approximately ½ minute.
0.005 per cent. solution in water and glycerine required more than ½ minute.

Boracic Acid:
A saturated solution (4 per cent.) in water required approximately 65 minutes.
A half-saturated solution (2 per cent.) in water required approximately 285 minutes.
A 2 per cent. solution in water and glycerine required more than 480 minutes.

Thymol:
A saturated solution (0.06̇ per cent.) in water required ½ minute.
A half-saturated solution (0.03̇ per cent.) in water required 12½ minutes.
A 0.03̇ per cent. solution in water and glycerine required more than 300 minutes.

In the case of thymol and *S. pyogenes aureus* the value of the constant in the logarithmic relation existing between the time required for disinfection and concentration, as given by H. E. Watson, is 5.6. This is almost exactly the same as that for phenol and *S. pyogenes aureus*, calculated from H. Chick's results, obtained in an entirely different way. However, the discussion of methods, etc., must be deferred and published with the graphs representing the variations in times required for disinfection with concentrations of these antiseptics; especially interesting are those showing the interference of glycerine and other solvents.

The theory underlying the action of glycerine is most interesting; possibly the glycerine merely acts as oil is supposed to act in the case of carbolic acid—that is, being a better solvent for the antiseptic, the latter does not diffuse so easily from the solution into the watery protoplasm. However, in some ways this explanation is unsatisfactory, and the fact that glycerine diminishes the

action of aqueous mercury perchloride solutions suggests that, like alcohol, it does so by diminishing dissociation. There seems to be some difference of opinion about the dielectric constant of glycerine, but probably it is less than that of alcohol (25), so that it would as a solvent have even less dissociating power. As far as I know, it is not generally considered, in the case of such substances as phenol with small dissociation constants, that the antiseptic properties of the solutions rest in the ions; but that such is the case is the most likely explanation which I can at present bring forward to account for the above results.

Whatever the theoretical explanation, however, it is quite clear that in practice it is more than useless to waste glycerine by using it as a solvent for antiseptics, and surely such preparations as glycerine of phenol and glycerine of boric acid should be omitted from the *British Pharmacopoeia*. Probably, in any cases where thymol solutions have been found to be unsatisfactory as mouth-washes, the failure is due to the presence of glycerine in them, as in many proprietary mouth-washes in common use.

COLLOIDS IN SYPHILIS.

BY

J. E. R. McDONAGH, F.R.C.S.

BEFORE a drug can exert its full therapeutic action it is necessary for it to become converted into the colloidal state. What this means precisely can be explained best in the following way: When a disease such as syphilis attacks the human body it always meets with a certain amount of resistance on the part of the host, whose main protective substance—or antibody as it is called—is the protein in the serum. The protein in the serum is in a colloidal state—that is to say, it appears in the form of particles, which possess Brownian movement and resemble bacteria when examined under the ultramicroscope. These colloidal protein particles kill the parasites by a surface action in which oxidation and reduction play a part. When a drug is prescribed it does not exist in the serum in the state in which it was injected; it first becomes converted into the colloidal state, in which form only can it be taken up by the colloidal protein particles. When adsorbed the drug stimulates and accelerates the destructive action of the protein particles. It can readily be understood that if a drug is administered in the colloidal form no energy is wasted in converting it into the colloidal state; that relatively and actually very much larger quantities can be adsorbed, whereby the therapeutic action is enormously enhanced; and that the chances of storage in the system are minimized, with the result that toxic action is practically done away with.

It has been shown that in syphilis the protein particles in the serum are more numerous and bigger than in other diseases; consequently, when a colloid is injected more of it is taken up, and this is why colloids have so great a therapeutic action in syphilis. The first effect of injecting a colloid is to break up the large protein particles into several small ones, an action which increases their activity, since the area exposed by several small particles is very much greater than the area exposed by one large particle. In syphilis there are many large particles to be broken up; hence the reason why any colloid is of therapeutic value in this disease. The injection of a colloid does more than merely break up the large protein particles; if it is a metallic colloid, it increases oxidation; if it is a non-metallic colloid, it increases reduction. As the oxidation process *in corpore* is regulated by iron, attempts have been made to prepare a colloidal iron compound to replace arsenic, which, being a metal not a normal constituent of the body cells, is apt to be toxic. The best colloidal iron compound so far prepared is ferric tri-para-amino sulphonate, ferric sulphanilate, or ferrivine. Although ferrivine is not so powerful as arseno-benzene, it has a greater effect on some lesions, and better results are obtainable when injections of different and not of the same oxidizing agent are used. Mercury, being a metal, behaves in the same way as iron and arsenic, but, like the latter, not being a normal constituent of the body cells, it is liable to be toxic. Comparing mercury and arsenic still further, we find that the toxic action of the former is less than that of the latter, because mercury does not show such a great affinity for nerve tissue as does arsenic. As arseno-benzene is administered, namely, as a salt, it is not in the best colloidal form possible; consequently the occurrence of toxic symptoms following the injection of the organic preparations of arsenic now in use can never be entirely eliminated. Mercury can be prepared in a perfect colloidal state, in which form it can be injected intravenously and intramuscularly with impunity and with extraordinarily good results.

Colloidal mercury, ferrivine, and arseno-benzene give us three oxidizing agents, and thus help us to diminish the amount of arsenic. As oxidation and reduction go hand in hand, it is necessary to combine drugs which have an oxidizing action with those which have a reducing action, as the continued use of one kind is detrimental to the patient; finally the deleterious action of an oxidizing agent can be overcome by the employment of a reducing agent. The two reducing agents I employ in syphilis are iodine and sulphur. In view of the importance of the colloidal state iodine can now be prescribed as a simple colloid intravenously and by the mouth. Collosol iodine is not only more powerful than any salt or organic compound, but it is practically never followed by iodism. Sulphur is now obtainable as a simple colloid and as a complex colloid, the activity of the latter being very much greater than that of the former. The complex sulphur colloid I use is di-ortho-amino-thio-benzene or intramine; it can be injected intravenously, intramuscularly, or taken internally; it has a very powerful therapeutic action in syphilis and in other chronic diseases; it is also a specific for mercurialism and arsenical poisoning, and its reducing action is much stronger than that of iodine.

Colloids are best injected intravenously, because means have not yet been found for entirely eliminating the pain which accompanies intramuscular injections. Injection for injection, the therapeutic action is greater when the intramuscular route is chosen, presumably because the drug can be converted *in loco* into the most suitable form to be adsorbed by the protein particles of the serum, without the latter having to be disturbed.

[We have received a report of observations by Professors W. J. Simpson and R. T. Hewlett in continuance of those published in the JOURNAL of May 5th, p. 585. Experiments were made with a fresh sterilized sample of collosol cocaine prepared in the Crookes Laboratories. The first experiment for toxicity was made upon a rabbit weighing 2,050 grams; the amount of the solution, 1 per cent. injected intravenously, was 19.5 c.cm. No toxic effect was produced. Two tests for anaesthesia were made. In the first 0.5 c.cm. was injected subcutaneously in a rabbit at 2.36 p.m. Two minutes later the area of injection was slightly insensitive; at 2.39 it was quite insensitive, and so continued until 2.55; sensation was returning at 3 p.m. and was completely restored by 3.30. In the second test 0.25 c.cm. was dropped in two equal parts into the eye of a rabbit at intervals of three minutes—at 2.37 and 2.40 p.m. From 2.44 to 2.55 the eye was quite insensitive. At 3 p.m. sensation was returning, and at 3.15 it was practically restored.

Mr. Lewis Stroud, the Secretary of the Crookes Laboratories (50, Elgin Crescent, W.11) informs us that since the publication of our note upon it, the preparation of colloid quinine has been improved by increasing its stability and decreasing its toxicity. A combined colloidal antimony and quinine has also been prepared, and Professors Simpson and Hewlett have reported that the intravenous injection of 9 c.cm. into a rabbit produced no effect.]

AT a recent meeting of the New York State Committee of American Physicians for Medical Preparedness resolutions were adopted that the committee should protect in every possible way the public posts and private practices of doctors who volunteer or are called up for military service during the present war.

AT a meeting of the Society of Public Analysts on May 2nd a short paper on two cases of opium poisoning was read by Mr. John Webster, F.I.C. One was a case in which a single dose had been taken; the other was that of a confirmed drug-taker. Chemical analysis of the viscera from the first case gave strong reactions indicating the presence of morphine in fair quantity. In the second case the reactions were slight, or even doubtful.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

INFECTIVE JAUNDICE IN FRANCE.

I WAS much interested in Dr. Arthur F. Hurst's letter,[1] in which he stated that in his opinion cases of infective jaundice from Gallipoli were often secondary to a catarrhal condition of an infective nature affecting the duodenum, with subsequent upward extension of the inflammatory process along the bile ducts, causing blocking of these and jaundice. The fact that the initial symptoms are practically always dyspeptic in character, consisting of anorexia, nausea, vomiting, and epigastric tenderness, certainly supports the view that the primary condition is one of duodenitis, while the frequent tenderness over the gall bladder may be readily explained as a secondary cholangitis and cholecystitis.

The following two cases are of great interest, inasmuch as in both instances we had symptoms of duodenitis and catarrhal jaundice followed some eighteen days later by attacks of typhoid fever and paratyphoid fever respectively.

The first case was that of a Canadian, aged 44, who on September 13th, 1916, "reported sick" in France with headache, shivering, sickness, nausea, and epigastric pain, and two or three days later became markedly jaundiced. After a week at the base hospital he was discharged to one of the home military hospitals, and on October 1st (that is, seventeen days after the onset of the dyspeptic symptoms, and fifteen days after the onset of the jaundice) he developed, while under my care, an attack of mild typhoid fever with fifteen days' pyrexia, with evening rises and morning remissions, and crops of roseolae; colonies of typhoid bacilli were isolated from the faeces. The mildness of the fever was no doubt the result of antityphoid inoculation in August, 1915 (thirteen months before the onset of the infective jaundice).

The second case was that of a young Scotsman, aged 19, who "reported sick" in France on March 2nd, 1917, with headache, anorexia, rigor, slight rise of temperature, and general aches and pains. Two or three days later he developed jaundice, and at the casualty clearing station, five days after the onset, was deeply jaundiced with a thickly furred tongue, while the urine contained bile in quantity and also a distinct trace of albumin. The agglutination reactions were negative to all the members of the typhoid group at this date, and a blood culture remained sterile after three days' incubation. On March 20th, that is, eighteen days after the onset of dyspeptic symptoms and about sixteen days after the onset of the jaundice, he developed, while under my care, an attack of paratyphoid fever. There was pyrexia for eleven days, rising gradually and typically by evening elevations and morning remissions to 104.4° F. on the sixth day and thereafter gradually falling by slow gradations until April 1st, when the temperature once more became normal. There were several crops of roseolae and the characteristic pea-soup motions. On March 29th *B. paratyphosus* A agglutinated the blood in a dilution of 1 in 50.

In both of these cases the attacks of typhoid and paratyphoid fever respectively were apparently direct sequelae of infective jaundice occurring fifteen to sixteen days previously.

It is well known that the bile ducts and gall bladder are favourite habitats of the typhoid bacillus, which may even flourish there for years after an attack of typhoid fever, as in the case of "typhoid carriers." In such cases there has presumably occurred an invasion of the bile passages, either directly from the duodenum or possibly indirectly from systemic infection, but I have not yet seen recorded cases similar to the two just described, where a typhoid or paratyphoid infection of the bile ducts was followed within three weeks by typhoid or paratyphoid infection of the intestinal tract.

London, W. R. MURRAY LESLIE.

[1] BRITISH MEDICAL JOURNAL, April 21st, p. 527.

PRIMARY CARCINOMA OF STOMACH IN A BOY.

THE patient, A. H., was a prisoner of war aged 18 and ten months. He was admitted to camp on June 23rd, 1915. The medical examination on admission discovered nothing abnormal.

He first reported sick on February 7th, 1916, and was seen by the assistant medical officer, who found him to be suffering from "dyspepsia and vomiting." Five days later, when I examined him, he was in a condition of profound collapse, with frequent vomiting and general abdominal pain; temperature (at night) 99.4°. A smooth rounded tumour occupied the space between the right costal margin and umbilicus. There was some tenderness and slight general abdominal distension. Examination of the rectum proved negative; the urine contained albumin.

I opened the abdomen, on February 15th, the liver was seen to be generally enlarged and studded all over with nodules; a small growth was discovered near the pyloric end of the stomach. There was no further operative interference. The patient died on March 11th, 1916.

Pathological and Histological Report.

Stomach.—The gastric wall is the seat of a new growth having the histological structure of carcinoma of the scirrhous type which has undergone almost complete necrosis, fibrosis, and calcareous infiltration. In the piece sent for examination the whole wall is converted into a dense fibrous mass with numerous deposits of lime salts, and here and there some small patches of cancer cells.

Liver.—The two portions of liver were freely infiltrated by deposits of new growth showing a great tendency to break down in the centre. Microscopically the structure is that of a carcinoma; the cancer cells are of a small spheroidal type, and arranged in compact solid masses. The outermost layer of cells of these masses is of a cuboidal type and suggests an origin from a columnar epithelium. No doubt the stomach is the primary seat, but the growth there is even more degenerate than the secondary nodules in the liver.

Lung.—I find no evidence of new growth in the pieces of lung sent for examination.

C. FLETCHER.

The extreme rarity of this disease at such an early age, the negative family history, and the short period in which the patient had reported himself ill, is sufficient justification for recording the case.

W. B. COSENS, Captain R.A.M.C.,
Medical Officer i/c Prisoners of War Camp, Dorchester.

HYPERTROPHY OF THE NIPPLE:

A HITHERTO UNDESCRIBED SIGN OF LEPROSY IN THE MALE.

THE entire credit of making these observations is due to Dr. A. J. Kohiyar, who first drew my attention to this sign.

Dr. Kohiyar has now made observations on 81 lepers. He found:

Both nipples very large in	62
Both nipples moderately large in	8
Large on one side only in	2
Both nipples normal in	9

I have made notes on 221 cases. My procedure was to ask an independent observer, usually a layman, if he noticed any peculiarity about the nipple. If he said it was enlarged, and I also had noted the nipple as enlarged, I recorded it as "large." If either of us did not characterize it as "large," I recorded it as "not enlarged." There were very few cases in which our verdicts differed. We found:

Both nipples enlarged in	167 cases
One nipple enlarged in	7 ,,
"Not enlarged" in	47 ,,

Taking Dr. Kohiyar's cases and mine together:

Both nipples enlarged	237 cases	= 79 per cent.
One nipple enlarged	9 ,,	= 3 ,,
Neither nipple enlarged ...	56 ,,	= 18 ,,
Total cases	302 ,,	= 100 ,,

The size of the nipple in the female depends on so many factors that it is of no aid in diagnosis.

As a control, 200 consecutive non-leprous males were observed. In only 2—that is, 1 per cent.—was any hypertrophy comparable to that of a leper observed.

ARTHUR POWELL, B.A., M.B., M.S.,
Professor of Medical Jurisprudence; Inspector of Lepers, Bombay.

A DECREE has recently been issued in Germany requiring provincial authorities to ascertain from the cattle dealers the number of animals required for provisioning each district. The provincial authority is then to notify to each commune the number of animals it is to supply. The officials are strictly enjoined to accept no excuses.

THE German authorities have arranged for the systematic testing, at the Robert Koch Institute, of blood taken from patients suspected of typhus fever. The Weil-Felix reaction is employed, and whenever the reaction is negative but the clinical symptoms remain suspicious, a second sample is examined.

Reviews.

TREATMENT OF FRACTURES.

PROFESSOR LERICHE has written for the *Collection Horizon*—other volumes of which we have had occasion to praise—a treatise on the treatment of fractures.[1] The first part deals with the treatment of fractures about the joints. It gives a sound and practical account of his method of treatment in these cases, and is well illustrated; it deals largely with injuries of war. The author says that he has ceased to make use of antiseptics, and aims at a purely aseptic surgery in his operative procedures; he relies largely upon the production of asepsis by early operation, exposure to the air, and adequate drainage. He speaks very highly of the value of heliotherapy—exposure to the rays of the sun—in lesions involving the joints, and his book may be recommended to the attention of surgeons anxious to learn about a method of treatment that has given excellent results in the hands of a Parisian colleague. The second part deals with fractures of the long bones. Here again Professor Leriche lays stress upon the importance of early surgical interference with the object of disinfecting fractures that have become infected. Subperiosteal removal of all fragments of the broken bones, as advised by Ollier as long ago as 1858, should, he thinks, be the rule. This subperiosteal resection should be executed delicately with small sharp instruments (*rugines*). After operation the limb must be immobilized in good position; the author details the splints and apparatus he is accustomed to employ in each variety of fracture. The two parts of his essay are issued in separate volumes and both are illustrated with reproductions of finely stippled drawings made by M. Rudaux from skiagrams; these reproductions appear to be singularly clear and intelligible interpretations of the originals from which they have been derived. They are very similar to the illustrations used by Professor Broca to which attention was drawn in the BRITISH MEDICAL JOURNAL of December 9th last, p. 804.

MESOPOTAMIA.

THE author of *In Mesopotamia*[2] says that in that country, with its entire lack of scenery, the artistic instinct can find little to inspire it beyond the moon, but goes far to belie himself in the excellent water-colour sketches with which his book is adorned; they prove at least that the river, its banks and its boats, lend themselves very well to impressionist methods, and there is at least one sketch, of a donkey caravan, which conveys a vivid impression of the glare and heat and dust of noon on shore. The author has as poor an opinion of the climate of Mesopotamia as all others who have written their experiences of a hot season there. The unit on the medical staff of which he served started by putting up a hospital of 400 beds just outside Basra, where, in addition to typhoid fever and malaria (differential diagnosis often difficult), many cases of heat-stroke were admitted. They came generally about 5 p.m., when, with the temperature falling and the humidity of the air rising, there was a time of intense discomfort owing apparently to diminished evaporation of sweat. A heat-stroke station, with two baths and ice chest, was put up at the water's edge; the patients were put into the chilled water and slapped and punched and laved until they began to turn blue and the temperature fell. Then, if any signs of collapse appeared, they were wrapped in a blanket; otherwise they were left naked on a bed in the open. But many died the next afternoon in the stifling ward. "What was possible with wet sheets and small pieces of ice was done, but it was a wretched business, and those who were in Basra at that time and saw these spectacles will never forget them; nor will they forget the silent, impotent rage that filled the mind at the thought of the giant-bodied small-headed Colossus of War which makes a useless sacrifice of men in ways such as these every day." The author does not venture on much direct criticism, except as to the absence of dentists, but the story he has to tell, short as it is, fully confirms the general opinion that the early failures, which caused so much suffering and loss of life, were due almost solely to want of reasonable foresight, and in particular to absence of any provision for transport at all commensurate with the increase in the forces landed. The hospital later on moved to Amara, and there nurses were added to the staff. To their work and to their influence on the moral of staff and men the author gives the highest praise. Of the rapid decay of teeth in Mesopotamia, of the mosquitos and sandflies and the fever the latter cause, of the enervating effect of the moist heat, and of many discomforts suffered, the inquirer may read at large in the book, and will be relieved to be assured that this hot weather improved transport will make things more tolerable.

NOTES ON BOOKS.

A NEW and revised edition of Dr. GEORGE REID'S *Practical Sanitation*[3] has now appeared. The fact that this popular work has reached its eighteenth edition within twenty-five years is sufficient proof of its value as a practical textbook for students of hygiene and sanitary inspectors. The new edition includes again the useful appendix of sanitary law and has been revised and brought up to date in matters of detail.

The volume of the *Minutes of the General Medical Council*, its branches and various committees for the year 1916 (volume liii) has been published. It includes fifteen appendices; among them the report of the Education Committee on Latin as an optional subject. The *General Index*[4] to the Minutes of the Council, its Executive and Dental Committees, and its Branch Councils, for the years 1903–16 (volumes xl to liii) has also been issued and will very greatly facilitate reference to the work of the Council during the years it covers.

The British Dominions Year Book, 1917,[5] edited by Mr. E. SALMON and Mr. J. WORSFOLD, contains an excellent series of authoritative essays and records dealing with matters that are of interest to all of us, although much information of importance has been withheld from the reader out of deference to the Censor. The editors have been able to secure the services of many able contributors, including the late Earl of Cromer, who writes on "The Aftermath of the War," Mr. Arthur Pollen, Sir M. M. Bhownaggree, and several others. Numerous special maps are included, and there are other coloured plates of orders of knighthood, decorations of honour, house-flags and funnels of the world's chief steamship companies, and the like. Naturally, the greater part of the volume is devoted to various aspects of the war.

Mr. E. V. LUCAS has written a short account of a visit he paid with Lord Monson, the British Red Cross Commissioner, during November and December, 1916, to the British units working at or near the Italian front. It began at the Villa Trento, near Udine, where Mr. G. M. Trevelyan, the leader of the mission of the British Committee in Aid of the Italian Wounded, has his head quarters; here there is a hospital of 150 beds, organized by Dr. G. S. Brock of Rome, but the pamphlet is appropriately entitled, *Outposts of Mercy*,[6] for some of the little clearing hospitals and ambulance stations are in remote Alpine valleys. Among the units at work is a mobile *x*-ray installation, organized and administered by Countess Helena Gleichen and Mrs. Hollings. Mr. Lucas visited also the desolate region of the Carso and penetrated into Gorizia, where a unit under Mr. Geoffrey Young was doing good work, and getting the wounded back over the dangerous Isonzo bridge. The whole story is pleasantly told, and there are some good photographs.

The eighth edition of Dr. NALL'S *Aids to Obstetrics*,[7] a book designed to help students preparing for examination, has been brought up to date and somewhat enlarged, as compared with the seventh edition, by Dr. LONGRIDGE. It is short and clearly written, and may be recommended to those who find the passing of examinations facilitated by books of this special class.

---

[1] *Traitement des fractures.* Par Professeur R. Leriche. I, *Fractures articulaires*; II, *Fractures diaphysaires.* Collection Horizon: Précis de médecine et de chirurgie de guerre. Paris: Masson et Cie. 1917. (Cr. 8vo; Vol. i, pp. 189, 97 figures; Vol. ii, pp. 272, 156 figures. Fr. 4 each vol.)

[2] *In Mesopotamia.* By Martin Swayne. London: Hodder and Stoughton. 1917. (Demy 8vo, pp. vii+166; 10 illustrations. 5s. net.)

[3] *Practical Sanitation: A Handbook for Sanitary Inspectors and Others Interested in Sanitation.* By G. Reid, M.D., D.P.H. Griffin's Scientific Textbooks. Eighteenth edition, revised. London: C. Griffin and Co., Ltd. 1916. (Cr. 8vo, pp. 379; 108 figures. 6s. net.)

[4] London: Constable and Co. *Minutes*, 12s.; *Index*, 2s. 6d.

[5] *The British Dominions Year Book, 1917.* Edited by E. Salmon, F.R.C.I., and J. Worsfold, F.C.I.S. London: The British Dominions General Insurance Co., Ltd. 1917. (Demy 8vo, pp. 384; illustrated.)

[6] *Outposts of Mercy.* By E. V. Lucas. London: Methuen and Co., Ltd. 1917. (Fcap. 8vo, pp. 60. 1s. net.)

[7] *Aids to Obstetrics.* By S. Nall, B.A., M.B.Cantab, M.R.C.P.Lond. Revised by C. J. Nepean Longridge, M.D.Vict., F.R.C.S.Eng., M.R.C.P.Lond. Eighth edition. Students' Aid Series. London: Baillière, Tindall and Cox. 1916. (Fcap. 8vo, pp. 224. Cloth, 2s. 6d.; paper, 2s. net.)

THE EFFECT OF LIQUOR CONTROL ON ALCOHOLISM.

LORD D'ABERNON, Chairman of the Board of (Liquor) Control, delivered a lecture before the Royal Institute of Public Health, on May 16th, on "Public health and the control of the liquor traffic."

The Problem of Alcoholism.

He maintained at the outset that throughout the whole course of public health legislation in this country the significance of the liquor traffic as affecting the health and physical well-being of the community had been neglected, a fact which was the more surprising because it could not be attributed to any lack of knowledge of the results of a widespread prevalence of alcoholism. Even the most superficial student of social problems was aware of the direct and indirect influence of alcoholic excess upon the incidence of disease and death. Nevertheless, Lord D'Abernon maintained that hitherto these effects were not generally regarded in their natural relation to public health, but had been viewed rather as elements in a special and distinct social problem belonging more to the sphere of morals than to that of medicine. In any case, little effort seemed to have been made until quite recently to deal with these evils of alcoholism in the sort of spirit in which a problem of preventive medicine would be approached, and to this circumstance Lord D'Abernon mainly attributed the fact that the evils had continued unchecked. Very little, he said, could be done towards the practical solution of this question so long as the only policies in the field were those put forward by the more extreme sections of the liquor trade, and by the advocates of total prohibition. The arguments on both sides of the controversy had this in common, that they were both based upon *a priori* conceptions and not upon evidence, and both led in practice to the same result—inaction.

There still, however, remained open a third and radically different policy—a policy of moderate and reasoned restriction, with which, of course, the Board of Liquor Control had largely concerned itself. By reasoned restriction the lecturer meant restriction directed specially to limiting the conditions which could be shown by observation to lead to drunkenness, to alcoholic excess, and to chronic alcoholism. In framing restrictions for this purpose two points received chief consideration—the strength of the alcoholic beverages, and the times during which their use was permitted. Thus concurrently the hours of drinking have been limited, and the use of liquors of very high concentration have been prohibited. A policy of restriction along these lines has been tried in this country during the last two years, and Lord D'Abernon based his argument upon the considerable amount of data already obtained regarding the effect of this policy upon the health of the population.

Alcoholic Mortality in War Time.

The first set of figures which he showed gave the mortality attributed to alcoholic excess in the years 1913–16; and, allowing for the fact that many deaths which should be attributed either directly or indirectly to alcoholism were not so certified, they yet served as an index of the movement of alcoholism during that period. As a check upon these figures the deaths from cirrhosis of the liver were set out side by side with them.

In 1914 the deaths from alcoholism—both the deaths attributed directly to this cause and the deaths to which it was a contributory factor—showed a slight upward movement. This was followed in 1915 by a movement in the opposite direction, moderate in the case of women, more pronounced in the case of men. The policy of restriction brought about by means of orders issued by the Board of Control came into force in the second half of 1915. Making allowance for the fact of enlistment, which withdrew a large number of adult males, and for other qualifying considerations, Lord D'Abernon attributed much of the decrease in alcoholic mortality in 1915 to the influence of restriction. The figures for 1916 strengthened his argument; restriction was in force during the whole of that year, and throughout the greater part of the country. Concurrently the decline in deaths from alcoholism was enormous, amounting to over 40 per cent. in the case of men, and to nearly 50 per cent. in the case of women, as compared with the pre-war standard of 1913. The extent of this movement, and the fact that it affected women even more than men, indicated beyond all doubt the operation of a new and potent influence acting on the general population, and Lord D'Abernon maintained that that influence could only be the restriction of drinking. Cirrhosis of the liver being an essentially chronic affection, it was to be expected that any effect of restrictive measures on the number of deaths from that disease would be less marked; and so it was.

Whilst admitting that it would be of great assistance in the study of this question if we had a statistical index of alcoholism of more unequivocal value and giving us a larger numerical basis, Lord D'Abernon defended the inference which he drew from these statistics thus: "Though standards may be very different in different areas, they appear, if we judge from the figures, to be thoroughly stable in the same area from one year to another, showing only moderate fluctuations over a series of years in which no unusual influences are operative." Limited statistics of delirium tremens, however, were available, notably from the Poor Law infirmaries of Liverpool. A return of the number of cases of delirium tremens treated in these infirmaries during the two twelve-month periods preceding, and one such period following, the date when the policy of restriction came into force, gave striking corroborative evidence of the effect of restrictive measures in reducing alcoholism.

Parallelism of Drunkenness Statistics.

This inference was further reinforced by the numbers of convictions for drunkenness in the same area during the same periods. The statistical fluctuations of public drunkenness, of delirium tremens, and of deaths from alcoholic excess show a close correspondence, from which the inference is drawn that the phenomena are, in fact, closely correlated.

In further support of this conclusion, Lord d'Abernon produced a table showing the convictions for drunkenness in England and Wales in each of the four years 1913–16. Comparing these figures with the statistics previously given of alcoholic mortality, he showed that the same characteristics were to be noted—in 1914 a slight decrease among men and an increase among women; in 1915 (during the latter months of which restrictions were in force) a decrease in the figures for both sexes, but much more pronounced among males; and in 1916 (the period of full restriction) a very large fall, nearly 60 per cent. in the case of men, over 40 per cent. in women, as compared with the pre-war year 1913. From this striking parallelism he argued that statistics of drunkenness were a much more reliable index of alcoholic excess than was usually believed.

The special value of statistics of delirium tremens was the index they furnished of the less overt forms of intemperance, thus serving to check both the accuracy and the significance of the official returns of drunkenness. It was often alleged that with the decrease in public drunkenness there had been an increase of home or secret drinking since the war; against this view Lord D'Abernon set the available figures for delirium tremens.

The Advantages of Control.

From the evidence which he had obtained, and which he made the more telling by means of diagrams, the lecturer concluded that much had already been done to limit alcoholic excess by a policy of moderate restrictions on drinking; notwithstanding that these measures had been imposed on the liquor trade by an outside authority, and that public-houses, especially in industrial centres, were much in excess of the reasonable needs of the population, and were often of a structural character making proper supervision almost impossible. Two facts of great importance he regarded as being definitely established by the experience of the last two years—that an enormous amount of preventable injury had been done to the community by the absence of fitting regulation of the drink traffic, and that, contrary to current belief, intemperance could be diminished to a considerable degree by legislative and administrative action.

British Medical Journal.

SATURDAY, MAY 19TH, 1917.

ARMY AND CIVIL CO-OPERATION FOR MEDICAL ECONOMY.

THE manner in which the War Office recently, through its recruiting department, sought, without consulting those best able to advise on the present position with regard to the needs of the civil population in different areas, to call up all medical men under 41—an order subsequently suspended—has demonstrated perhaps more strikingly than anything that has yet occurred the need for co-operation between the military and civil authorities before any decision affecting the distribution of medical men to the army and to the civil population is reached. We are encouraged to recur to this subject by the remarkable speech delivered by the Chief of the Imperial General Staff on May 12th. It was a considered and moderate statement, and produced a very great impression upon all who heard it. Sir William Robertson spoke of the enormous numbers actually engaged in operations in the field, but went on to say that this war was not, like its predecessors, a war between armies but a war between nations, for there was no man or woman in the British empire who was not that evening doing something to help either to win or lose the war. He quoted an estimate given to him by a man of distinction, who put the weight of the military factor in the war at about 25 per cent., the remaining 75 per cent. not being of a pure military nature, but made up of many things, such as agriculture, shipping, and food, and in another place he made special reference to munitions. Now if Sir William Robertson is right—and those who heard him were convinced of the deep conviction with which he spoke—it is clear that the War Office must have continual regard to the welfare of the 75 per cent. He appealed to the press to keep its eye on that 75 per cent.; we are only concerned immediately with the medical profession, and we estimate that probably one-third of the active practitioners are already serving in the army. The civilian population has so far accommodated itself to the depletion, but further drafts upon the civilian profession can only be met without injury to Sir William Robertson's 75 per cent. if they are made after the most careful investigation of all the circumstances. It has to be borne in mind that the civil profession, already depleted of one-third of its more active members, is not being recruited by younger men. In the first place, almost all male medical students who qualify enter the army; and, in the second place, the number of male medical students coming forward for early qualification is decreasing. The statistics for January last issued recently by the General Medical Council show that 1,088 men then studying might qualify during 1917, but that the number qualifying in 1918 might be expected to be only 851, and in 1919 only 572. Of those medical men who remain in civil practice a considerable proportion are no longer young, so that at both ends the effective personnel of the profession is being diminished.

We are bound to say that at present the War Office has not given evidence that it recognizes fully the position which this depletion must produce in the near future, nor that it is preparing for the inevitable day when the supply of more medical officers to the army from the civil community will be dried up. We fear that if care be not taken to forecast the future a position will be brought about which must inevitably attract the attention of Parliament and lead to the demand for a commission of inquiry. No one can regard the prospect of such an inquiry with equanimity, and the means by which so undesirable a result can be obviated are well deserving of consideration at the present time. The situation which is arising—in fact, has in large measure already arisen—can, we believe, be met by economy on the civil side and by economy on the military side, and by co-operation between both.

Regarded from the point of view of the military arrangements in this country, the problem to be solved is how medical provision for troops or potential troops in this country can best be made. Troops in this country vary in character. A rough classification would be into new divisions in process of formation and training destined ultimately to go abroad; garrison troops and provisional battalions; troops in dépôts to serve as drafts for battalions or other units already at the front; and, finally, the sick and wounded. Potential troops may be defined as consisting of the men who present themselves before recruiting medical boards for examination as to their fitness to serve. Here at once we find a matter upon which, we believe, co-operation between the military and civil authorities would be productive of much good. There are, we understand, commands in which this co-operation exists, and the plan appears to have worked well. By its adoption in other commands it might be possible to avoid certain incidents which have scandalized the public and greatly distressed members of the medical profession.

With regard to troops under arms or in training in this country, it is possible that no very great economies can be effected on the military side; at the same time the complaints which reach us of lack of work are so numerous that even here it would be satisfactory to know that the War Office has really made the utmost effort to effect economies. While there can be no doubt that at some stage in the process of training a division which will ultimately go abroad it is essential that its complete medical units should be organized and trained to work with it, yet under the pressure due to the existing shortage of doctors it may be found that the filling up of the cadres of the medical units might be deferred to a period later than seems now generally to be the practice.

The medical supervision of garrison troops, provisional battalions, and dépôts for drafts, raises at once the question of the merits of whole-time and part-time service in existing circumstances. Under peace conditions it is, no doubt, very desirable that every unit should be properly equipped with its medical officers, even if the majority of these officers may have relatively little work to do. In the scheme of organization for peace the army seems to have had on an average one doctor to every 250 soldiers; the War Office has undoubtedly effected economies, for the proportion is not at present so high as this; but it is still high, since if our calculations are correct the average is somewhere about one doctor to 400 soldiers. At the same time the average for the civilian population is much nearer (and in this calculation consultants and whole-time officers are included) one doctor to 2,000 persons; there are areas in this country where there is only one doctor for 7,000 or more persons. We do not profess to say that the

army proportion is too high, but we feel bound to suggest that the civilian proportion is getting so low that the drain upon the civilian practitioners cannot be maintained indefinitely without a breakdown, to remedy which the public and Parliament will demand drastic measures to be taken, and we may all take the passages in Sir William Robertson's speech quoted above as a warning.

In dealing with troops never likely to leave this country and stationed at points near large centres, part-time service, for the performance of work which demands at most only a few hours a day, must be more economical than whole-time service; in fact, it is clear that as doctors become more scarce while the demand from the fronts continues to increase, some scheme for utilizing home doctors on the spot, partly for the soldier and partly for the civilian, must be adopted. In many instances this has already been done, but we would like to ask whether the principle has been developed to the fullest extent compatible with efficiency. The War Office has asked for all medical men under 41. Let us take the case of a village near the coast with one doctor under 41 and no other practitioner within ten miles, while at some fort in the neighbourhood with a small garrison there is a R.A.M.C. officer miles away from any other unit. The medical work of the village and the fort could be done by one man; either the civilian might take over the fort and release the officer, or the officer might take over the village and set free the doctor under 41 for a commission. Correspondence which reaches us suggests that in some instances, at all events, neither course has been adopted, yet unless one or the other is adopted a medical officer is lost to active service. The advantages or disadvantages of taking either course in any individual case can only be settled by co-operation between the military and the civil side.

The last class in our classification of troops in this country are the sick and wounded, and the great extension in the number, and in many instances in the size, of auxiliary hospitals raises problems of its own which have a direct bearing on the matter we are discussing. Here the indiscriminate withdrawal of men over or under 41 for army service cannot make for economy. We may take as an instance a town in the south of England in which and in its neighbourhood are military hospitals providing a large number of beds. Among the staffs of these hospitals are five medical men under 41 and they cannot be withdrawn for general military service unless some other arrangements are made for dealing with the military hospitals. The reply of the Army Medical Department may be that the men should be taken and that the military authorities will arrange for the work of the military hospitals. This can only mean that the War Office would withdraw whole-time officers from other military employment and send them to take charge. There will be periods when the officers so sent will be by no means fully occupied. It is in these intervals that the doctors now doing the work of the military hospitals are able to attend to the needs of the civil population. If they are taken away it is obvious, under present conditions, that there must be a waste of medical time and energy. No doubt the difficulty can be solved by an investigation of the conditions by the army and civilian representatives to ascertain the most economical way of running these military hospitals, whether by whole-time or part-time service, to the best advantage of the military and civilians.

We are convinced that co-operation of a proper kind conducted in a friendly and business-like spirit between the military and civilian medical authorities will make for economy without loss of efficiency. With co-operation it is probable that a better system for dealing with the examination of recruits could be evolved, a system combining efficiency with economy in medical service, while saving the country much expense and individuals much needless irritation and loss of time. With co-operation an effective and economical system for the use of part-time service might be devised, thus setting free many medical officers for medical service abroad and lessening the disability from which the civil community is already suffering, and from which, if the present conditions continue, it may suffer more severely in the near future. Again, with co-operation much might be done to curtail the large expenditure of energy and money on the multiplicity of small hospitals—a matter to which we referred more at length last week.

While fully recognizing the obligation upon the military authorities to see that the troops and the sick and wounded have the largest and most efficient medical service the country can provide, we believe that the time has come when it is essential that the War Office should give fuller consideration to the needs of the civil community and frankly recognize that hasty action such as that taken on April 18th introduces complications and obstructions which will be avoided by co-operation and consultation with the civil representatives.

A MINISTRY OF HEALTH.

THE position of the British Medical Association, so far as it is at present defined, with regard to the proposed Ministry of Health may be briefly set out as follows. As soon as it appeared that the Local Government Board was considering the introduction of legislation bearing upon the provision of midwives and nurses for expectant mothers, and medical care (possibly including domiciliary treatment) for children under 5 years of age, a deputation of the Insurance Acts Committee waited upon the chairman of the National Insurance Joint Committee, and the Medico-Political Committee addressed a letter to the Local Government Board. It was realized that the smaller question immediately involved could not be approached without regard to the much wider questions arising out of it, such as the extension of whole-time medical services under the Local Government Board, and the future position of medical practitioners under the panel system. A special committee was formed, and early arrived at the conclusion that the only satisfactory method of placing the health administration of the country on a sound basis was by the creation of a Ministry of Health, thus endorsing the continuous policy of the British Medical Association during the past fifty years. A deputation from the Association to the President of the Local Government Board put forward this view on March 16th, and elicited from Lord Rhondda the reply that whatever methods were contemplated by the Government full use would be made of the general practitioner in any legislative rearrangement of the present system of health administration of the country. He further expressed a desire to have the views of the Association upon the wider question of a Ministry of Health. The special committee accordingly applied itself to the task of roughing out a scheme for the approval of the Council and the Representative Body, and its recommendations have now been adopted by the Council and published in its annual report (SUPPLEMENT, May 5th, 1917, p. 88).

The committee assumed throughout its inquiries that the general wish both of the medical profession and of the public is for the construction at the centre of a health department of State, which to be effective must involve rearrangement and simplification at the periphery. Assuming that the proper course would be the creation of a Ministry of Health to take over from existing Government authorities such duties as are concerned with the health of the community, and to deal exclusively with these duties, it held that the administrative functions of this ministry should be carried out by a board presided over by a Minister of Cabinet rank, and containing in equal numbers members of the medical profession representing the clinical and preventive sides of medicine, and further that the medical administration of these two sides of the work of the Ministry should be directed by medical officials of equal status. These, stated in very general terms, are the broad proposals for unifying the existing health departments of the country. It is hoped that they will command the support of the medical profession and the public; but that they will prove wholly acceptable to the various departments of State already concerned to any large extent in matters of public health is scarcely to be expected. The attitude of the Local Government Board, for instance, to the suggestion that a Ministry of Health should be anything other than the Local Government Board on a larger scale—trimmed here and touched up there perhaps, but essentially the same department—may be guessed from a recent statement by its president. Replying to a deputation of infant welfare organizations on May 7th, Lord Rhondda said that for his part he was not in favour of a completely new ministry, but hoped that it would be based largely and mainly on the Local Government Board, converted into a Ministry of Health and Housing. He also repeated his hint that the proposals for a Ministry of Health might come to nothing in the near future, but added that even so a bill to provide for the feeding of nursing and expectant mothers, and for supplying milk to children would be introduced. It may be worthy of note that these remarks were made after the draft scheme had been forwarded to him by the Council.

With regard to local organization, the recommendation in the scheme is briefly that suitable administrative areas should be defined throughout the country, each geographical division being of such a size as to need the services of two whole-time administrative medical officers, one clinical and the other preventive, working under a local administrative health committee, representing the main interests affected—namely, the rating and education authorities, the participants under a health insurance scheme, the medical profession, the hospitals, dentists, pharmacists, and nurses — the first three interests forming a bare majority of the committee. The medical officer of health would, as at present, be the principal preventive medical officer of each committee, and beside him it is recommended that there should be a chief clinical officer of equal status with himself. Without attempting any precise definition of the duties of this chief clinical officer, it may be said that they would be to advise on all questions of medical treatment, to supervise treatment wherever given, and to co-ordinate the clinical work of the area, thus leaving to the medical officer of health the statistical and preventive duties now undertaken. The bulk of the practising medical men and women of each district would come into direct touch with the local health authority, and would form the medical staff of the area, thus fulfilling the principle laid down by the committee that as many medical practitioners as possible should be attracted to the work. The administrators and inspectors would be whole-time officers; the institutional officers would be whole-time or part-time medical officers according to local requirements; those engaged in domiciliary practice would not be salaried officers, but paid by some method dependent either on the actual items of work done or on the number of persons for whom they accepted responsibility. Some elasticity in the classification of medical officers and their duties must be provided for, if only at first.

The organization of treatment at hospitals, clinics, and similar centres, forms an integral part of the scheme put forward; for it is recognized that every patient, through his medical attendant, should be able to obtain the institutional, consultative, or specialist services which he needs, including the benefits of a pathological laboratory. This raises at once the question of the continuance of the voluntary hospital system and its relation to the proposed health service. The feeling of the committee which has been studying the subject, and doubtless also of the medical profession and the public, is against the abolition of the voluntary hospital, which might well be supplemented, but could not be adequately replaced by hospitals wholly maintained out of public funds and existing for the benefit of a section of the population only. It is proposed that where voluntary hospitals receive patients entitled to treatment under the public scheme they should be paid for this work, and that the medical staffs of the voluntary, no less than of the supported hospitals, should be paid for their services to such patients. Clinical and pathological laboratories, not divorced from research work and effectively linked up with institutions of university rank, should be organized throughout each area in proportion to the needs of the district.

Such are, briefly, the recommendations now before the British Medical Association; they will be considered by the Annual Representative Meeting, and, it is hoped, will form the basis for a definite policy which may commend itself to the profession at large.

THE DIMINUTION OF DRUNKENNESS.

"DRINKING is the cause of drunkenness" was a favourite saying of one of the pioneers of the scientific study of alcoholism. The aim of the platitude was to induce his hearers to think about the effect of the too numerous facilities and temptations to mere drinking offered by licensed victuallers. They had largely ceased to be victuallers, and become mere beer and spirit vendors. The Chairman of the Central Liquor Control Board has, during the last few days, been able to publish some very interesting information with regard to the result of the restrictions on the sale of intoxicants. One difficulty in estimating the fluctuations in the amount of drunkenness has always been the uncertainty of the statistics, because it has not been shown that the convictions for drunkenness—the statistics most easily available—and those of deaths attributable more or less certainly to alcohol, were comparable. Lord D'Abernon, in the address to the Royal Institute of Public Health, a report of which is published at page 651, has made a solid contribution to the subject, founded upon investigations made by Dr. E. W. Hope and others. He gives good reasons for thinking that a policy of control of the liquor traffic, by which the strength of alcoholic drinks is lowered, and the time during which they may be

bought is shortened, has produced already a marked reduction in alcoholism throughout the country. The result of this inquiry and the diminution in convictions for drunkenness in areas where restrictions have been enforced, will no doubt encourage the Government to proceed with the policy of State purchase and regulation.

In a speech made to the Chief Constables' Association on May 11th, Lord D'Abernon insisted that the great reduction in the number of convictions for drunkenness in those parts of the country where restrictions had been in force implied that the problem of drunkenness had become very much smaller from a numerical point of view; he went on to suggest that it might now be possible to adopt more specialized methods, giving more attention to individual cases of drunkenness and making fuller use of expert investigation and advice. This suggestion is sound, and Lord D'Abernon's division of "drunk" cases coming before magistrates into convivial, mentally defective, and chronically alcoholic is reasonable, although the real chronic alcoholic is generally the subject also of neurosis of some sort, and the line of demarcation between the mentally defective alcoholic and the chronic alcoholic is ill defined, and probably not definable. Lord D'Abernon suggested that, fortified by expert assistance, a magistrate would know whether the drunkard charged before him was an ordinary convivial offender, to be punished with a fine; a mentally defective, whose proper place was an institution for the feeble-minded; or a chronic alcoholic, whose best chance of recovery would be to be sent to an inebriate reformatory, or, failing to find sureties, to be committed to gaol for three or four months. Experience we think, however, shows that imprisonment is absolutely valueless in the case both of the mentally defective alcoholic and the chronic alcoholic. The repeated imprisonment of such cases year in and year out has been a gross fault in our methods for many years past. The realization of this defect led to the passing first of the Habitual Drunkards Act in 1879, and then of the Inebriates Act in 1898. Both these Acts were insufficient, and have failed. Their main defect was that they did not make the provision of reformatory accommodation compulsory upon either central or local authorities. They give permissive power to local authorities to establish institutions, and permissive power to magistrates to use them or not at their discretion. As local feeling usually ran counter to the policy of detention for the purpose of cure the local magistrate did not commit; thus the Acts failed. All the inebriate reformatories established under the Inebriates Act are now converted, or in process of conversion, into institutions for the mentally defective; the present is no time to ask local authorities to spend money on the re-establishment of institutions for inebriates, and the Treasury is little likely to take in hand new work of this kind, which must entail expenditure on buildings and maintenance.

The fact is that in spite of the enthusiasm of those who believed in the need for such legislation as it was hoped to embody in the Inebriates Act the public could not be induced to recognize its value; lack of public interest must be fatal to any permissive scheme. After the war the Board of Control (Lunacy and Mental Deficiency) may be able to deal with the mentally defective inebriate, but to-day the financial provision made for carrying out the provisions of the Mental Deficiency Act of 1913 is very restricted, and the Board has often had to hold back work, of the most urgent kind, for mental deficients.

We are glad to see that a committee of experts, with Lord D'Abernon as chairman, has been appointed to consider the effects on health and industrial efficiency of the consumption of beverages of various alcoholic strength. The guidance of physiology and pharmacology is greatly needed, and we have no doubt that on the administrative side Lord D'Abernon is right when he says that the 90,000 licences in England could be reduced by about one-third—in many places we should have supposed by a much larger proportion. But the policy which he said was under contemplation in a north-east coast area of closing public-houses for all purposes when they were closed for alcohol seems to require very careful consideration in view of the results obtained in Carlisle, where, as reported in another column, the trade in food at the Gretna Tavern, established by the Board, is over 75 per cent. of the total takings. There people can sit down comfortably in a properly appointed room to a meal, and are not tempted to stand about drinking and treating each other, as in the ordinary public-house bar. One of the recent conclusions of the Board itself is that many of the people who frequent public-houses desire food as well as drink, and that the attempt to meet this demand, with proper safeguards against abuse, should be encouraged.

MEDICAL INSURANCE AGENCY.

IN presenting the balance sheet for 1916, duly certified by the auditors, Messrs. Price, Waterhouse, and Co., to a meeting of the Committee of the Medical Insurance Agency on May 10th, the Chairman, Dr. G. E. Haslip, said that the total receipts from premiums and other sources during the year had reached £13,660, as compared with £12,250 in 1915, and £10,350 in 1914. The surplus available for medical benevolence was £841, compared with £798 in 1915. This had been accomplished while repaying to persons insuring through the Agency £790, so that the total saving to the medical profession derived from its work represented a sum of £1,631. Such a result in spite of the war, it was pointed out, was extremely satisfactory. Shrinkage in the accident and motor insurance accounts had been anticipated, as many men had laid up their cars owing to having received commissions in the R.A.M.C. During the period that a car was laid up the policy covered only fire and burglary, so that the amount of premium payable was considerably reduced. Nevertheless, the actual number of cars insured was larger than at any time since the formation of the agency. This, it was believed, was due to the fact that owners appreciated the prompt way in which claims had been met. Two interim distributions to medical charities had been made during the year, the total amount thus paid being £705, as compared with £630 in 1915, and with the unexpended balance brought forward from 1915 the audited accounts for 1916 disclosed a further sum of £231 available for benevolent purposes. The Chairman also reported that the anticipated surplus earned since January 1st, 1917, would justify the committee in making immediately an interim distribution for the current year of £500. The balance sheet for 1916 was approved, and the chairman was thanked for the interest he took in the work of the agency. The committee resolved to make the interim distribution of £500 as follows: the Royal Medical Benevolent Fund, £200; the Royal Medical Benevolent Fund Guild, £100; Epsom College Benevolent Fund, £150; Royal St. Anne's School (for Girls), £50. Some discussion took place with regard to differences of opinion arising between those responsible for the administration of medical benevolent institutions as to testamentary benefactions which were not clearly defined, and the Chairman was asked to raise the point with these bodies, in the hope that arrangements might be made under which any future difference of opinion would be settled by arbitration. The Chairman

referred to the arrangements made with a life office of high standing under which life assurance is obtainable by those undertaking military service, covering full war risk, or with the war risk suspended without ultimately invalidating the policy. The contract would appear to be the most favourable now available, and the agency has effected a considerable number of such policies. Full particulars will be supplied to those interested if they will communicate with the Secretary of the Medical Insurance Agency, 429, Strand, London, W.C.2.

OCCUPATIONAL RE-EDUCATION OF THE WOUNDED.

THE inter-allied conference on the occupational re-education of wounded men and on general questions concerning men crippled in the war, held in Paris last week at the Grand Palais, was attended by official delegates from all the allied countries. Great Britain was represented by Surgeon-General M. W. Russell, C.B., Deputy Director-General A.M.S., and Lieutenant-Colonel Sir Berkeley Moynihan, C.B., and Canada by Lieutenant-Colonel Finley, C.A.M.C. In addition to the official delegates, a large number of ordinary members of the conference were present either on their own behalf or on that of the many institutions, including the British Red Cross Society, which in all allied countries interest themselves in endeavouring to improve the well-being of wounded soldiers. The work of the conference was conducted in six sections, dealing with physical re-education, occupational re-education, the finding of situations for crippled soldiers, the consideration of their economic and social welfare, the treatment of the blind, deaf, and gravely crippled, and lastly, statistics and propaganda work. While the attention of the conference was most closely directed to matters concerned with the medical aspects of the questions involved, at least equal, if not greater, importance was given to social considerations affecting the future of wounded men. The main point insisted upon again and again in the conclusions reached by the various sections was the essential importance of early treatment and the need for the closest possible co-operation between the medical man, the patient, and persons specially skilled in the work of re-education. The work of the conference was carried out by a system of reports presenting general conclusions, and speeches were limited to five minutes. Members of the conference were invited to visit special installations for the treatment of wounded in and about Paris. The general conclusion of the British representatives was that while the French methods of work were most excellent, British practice was thoroughly abreast of the times. During the discussion at the conference on the importance of training men for local work and for those occupations in which they had been engaged before the war, it was urged as essential that in preparing men for civil occupations the problem of marketing their products must not be neglected; it was said that trade unionists might resent the State training men to skilled trades which they had not practised before, and it was therefore recommended that the attention of crippled men in France should be directed to trades that needed reviving in that country, and to new trades which might be introduced into it. Another official conference is being held this week at the Val de Grâce Military Hospital, Paris, to exchange views on the treatment of wounds, with the object more especially of disseminating knowledge as to the activities of the medical services of the various countries, and of adopting those methods of practice shown to be most valuable.

FOOD AND DRINK IN BILLETS.

ARMY ORDER 118 (March 28th, 1917) directs that when the keeper of a victualling house or the occupier of a public building, dwelling house, or other premises is required to furnish meals for a soldier billeted on him such meals shall consist of the following quantities of food and drink: (*a*) *For breakfast:* Five ounces of bread, one pint of tea with milk and sugar, four ounces of bacon. (*b*) *For hot dinner:* Twelve ounces of meat previous to being dressed, four ounces of bread, eight ounces of potatoes or other vegetables. (*c*) *For supper:* Five ounces of bread, one pint of tea with milk and sugar, two ounces of cheese. It shall be permissible to vary the description of food and drink by substituting such equivalents as shall be authorized by the responsible officer. This scale of diet would yield about 3,145 calories a day, but it is to be expected that the men supplement it by tea between midday dinner and supper, which, with sugar, milk, and bread, would probably raise the total energy value to about 3,500 calories a day. This seems enough for the average soldier in training at home. Some big men will find it rather short as a marching ration. They may make up with gifts from friends. There are many go-easy days when work is lighter owing to various circumstances, including the state of the weather, etc. At bayonet drill and some other exercises, many look on while a few at a time work. The work is not of more than average heaviness, and the figures given by the Royal Society Committee for that is 3,500. Experience seems to show that it is ample for the home army. A great deal is being done now in many commands to save waste. Fat is scraped from plates and rendered down. Fat from washing of dishes is trapped. Broken bread is collected from tables, immediately baked, and then ground and used for making cake, sausage, etc.

SHELL SHOCK, GAS POISONING, AND WAR NEUROSES.

IN his capacity as consultant to numerous German military hospitals, and as head of a special hospital, Professor H. Curschmann[1] has been confirmed in the opinion, previously formed by him in private practice, as to the marked difference between war neuroses in officers and in the rank and file of the German army. He has come to the conclusion that the same psychic and bodily injuries set up far less serious neuroses among officers than among privates, whilst the prognosis also is usually much graver in the case of the lower ranks. This observation, according to Curschmann, does not tally with the view that war neuroses are the result of minute injuries to the molecular structure of the nervous tissues, but favours the view that they have a purely psychogenic basis, the better mental equipment of the officers—and he might have added, the greater comfort of their existence—rendering them relatively immune to the depressing effects upon the nervous system of high explosives, exhaustion, and exposure. Dr. Mott, in his interesting paper on punctiform haemorrhages of the brain in gas poisoning, which we print this week, mentions the *post-mortem* appearances of brain sections from fatal cases of shell concussion, and discusses the part played by carbon monoxide and other poisonous gases, including the German drift gas, which in some instances at least is a mixture of chlorine and carbon oxychloride ($COCl_2$). The latter, commonly called phosgene, is a colourless suffocating gas about three times heavier than air, which is slowly decomposed by water into carbonic acid gas (CO_2) and hydrochloric acid. The evidence advanced by Dr. Mott of structural lesions in severe cases is quite conclusive, and it would appear, therefore, that Curschmann's contention, if it has any validity, can apply only to slight cases.

GERMICIDAL ACTION OF ULTRA-VIOLET RADIATION.

IN a paper on the germicidal action of ultra-violet radiation and its correlation with selective absorption, read at the meeting of the Royal Society on April 26th by C. H. Browning, M.D., and S. Russ, D.Sc., a new method was

[1] *Deut. med. Woch.*, March 8th, 1917.

described rendering it possible to determine what portion of the ultra-violet spectrum is most effective in germicidal action and to specify the wave-length of the radiation at which such action practically ceases. The method consisted in exposing a thin film of organism spread on a nutrient surface, such as gelatine or agar, to the spectrum from a tungsten arc. The image of the slit of the quartz spectrometer used produced a permanent effect upon the bacterial film over a certain range of wave-lengths. This germicidal action became apparent on incubation at 37° C. subsequent to the exposure; a copious growth occurred except in those regions where the organisms had been killed. Records of such action were obtained which resembled a photograph of the spectral lines. The method has been applied to test the range of susceptibility of a number of different pathogenic organisms. By the process described it was possible to expose cultures of two different organisms simultaneously to the same intensity and character of radiation. The ranges of susceptibility of *B. typhosus* and *B. coli* were closely similar and practically the same as those of organisms such as *Staphylococcus pyogenes aureus* and the meningococcus. A striking feature of the germicidal action of the radiation in question was its abrupt termination at a wave-length of about 2960 Å.U. It had been found possible to correlate this feature with "selective absorption," for it was found that the organisms exhibited marked absorptive power for just those rays which have germicidal action.

FIGHTING DOCTORS.

In an account of a cutting-out operation by gunboats which we remember to have read, the commander of the expedition was said to have asked for a "fighting doctor" to be sent to him. The doctor, whose proper function is the saving of life, is not generally expected to handle weapons of destruction, but there have been instances in which he has been carried away by the fighting spirit in the excitement of battle. Many years ago we knew an old army surgeon who at Waterloo threw away his bandages and tourniquets and took part in the famous charge of the Scots Greys, holding on to the stirrup of a horseman. According to Kinglake, the Duke of Cambridge in the Crimea on two occasions owed delivery from a position of embarrassment to army surgeons. When the Guards were hard pressed at Inkerman, the Duke went in search of reinforcements, and a remnant of the regiment had to be brought out through a heavy Russian column by Dr. Wolseley, who was, we believe, a brother of Lord Wolseley. The Duke was rescued a second time in the same action by the pluck of another doctor. Dr. Wilson was attached to the brigade of Guards as a volunteer assistant surgeon from the 7th Hussars. At a most critical moment of the battle he got the Duke of Cambridge out of a position of extreme danger. For this service he received the thanks of the Duke at the head of the brigade after the battle. Sir Anthony Home won the V.C. during the siege of Lucknow "for persevering bravery and admirable conduct in charge of the wounded men left behind the column, when the troops under the late Major-General Havelock forced their way into the Residency of Lucknow, on the 26th September, 1857." The details are given in the *London Gazette* of June 18th, 1858; "The escort left with the wounded had, by casualties, been reduced to a few stragglers, and being entirely separated from the column, this small party with the wounded were forced into a house, in which they defended themselves till it was set on fire. They then retreated to a shed a few yards from it, and in this place continued to defend themselves for more than twenty-two hours, till relieved. At last, only six men and Mr. Home remained to fire. Of four officers who were with the party, all were badly wounded, and three are since dead. The conduct of the defence during the latter part of the time devolved therefore on Mr. Home, and to his active exertions previously to being forced into the house, and his good conduct throughout, the safety of any of the wounded, and the successful defence, is mainly attributed." Dr. Ryan, author of *Under the Red Crescent*, took an active part in leading Turkish troops at Plevna. But fighting doctors have usually shown their warlike spirit defending their patients. In the Paris revolution of 1832, when the crowd threatened to attack the Invalides, Larrey took up a position at the main entrance and told the attackers they would have to pass over his dead body to get at his patients. Lieutenant-Colonel J. H. Reynolds won the V.C. by his active defence of the wounded under his care at Rorke's Drift. A correspondent of the *Chronique Médicale* gives some other instances. In a French retreat in one of Dumouriez's campaigns during the wars of the Republic, the serious cases could not be moved from the hospital at Aix-la-Chapelle, and Surgeon-Major Bavay alone remained at his post. After the evacuation of the town by the French the populace attacked the hospital. Bavay distributed guns among the orderlies, barricaded the doors, and held back the assailants. In another battle Surgeon-Major Martin when the French retired placed his wounded men in wagons, marched in the rear of the convoy, and foot by foot disputed the ground with the enemy. At the evacuation of Lisbon the surgeon-in-chief, Jean Béguerie, pistol in hand, defended his patients against the insurgents. Chirurgien-aide-major Pierre Pichon was on duty at the Madrid Military Hospital on May 2nd, 1808, when the Spanish rose against the French. When the crowd tried to storm the building Pichon, assisted by his orderlies, drove them off with guns.

THE FRENCH ARMY MEDICAL SERVICE.

In an article on the French Army Medical Service published last week it was stated that many leading Frenchmen were dissatisfied with the status of the service in relation to other branches of the army and to the higher commands, believing that the position of subordination in which it was placed interfered with the efficiency of arrangements for the collection, treatment, and transport of wounded. We are glad to be able to state that an official decree, defining the relation of the Army Medical Service to other branches and to the commands, has just been issued, which it is believed will remedy the defects to which attention was called. The first article of the decree extends the reform instituted in 1882, which gave medical officers control over the personnel and material of the medical service and the command of administrative officers of medical units and hospital orderlies. In future the medical will stand in the same relation to the command staffs as other branches, will give to the command information as to the resources available and the arrangements which should be made for the supply of personnel and material, and will take part in the drafting and issue of orders concerning the medical arrangements.

TERRITORIAL AND SPECIAL RESERVE OFFICERS.

On May 5th we printed the views of various correspondents upon the promotion of temporary R.A.M.C. officers. Correspondents in the R.A.M.C. Special Reserve and Territorial Force pointed out that promotion in these branches of the service is disappointingly slow, and maintained that it would be unjust to them if temporary officers were promoted to the rank of major as a matter of course after two years' service. We are aware from communications which we have received at various times during the war that many medical officers in the Special Reserve and Territorial Force feel aggrieved at the treatment accorded to them by the War Office. Their point, as we understand it, is that in times of peace they gave up their leisure in order to train themselves, in camp and otherwise, for a national emergency; that they have

been mobilized since the beginning of the war without any opportunity for carrying on, or safeguarding, their civilian practices; and that in return for this they have received little sympathy or recognition from the authorities. One correspondent sums the matter up rather bitterly thus: "The main thing that the present war has impressed on us is, 'Don't join any reserve force in time of peace, because when your country needs you it will give you better conditions, higher rank, and more pay if you have done nothing before.'" It cannot be denied that there is truth in this, nor that it represents a somewhat widespread feeling. So far as the Territorial Force is concerned the British Medical Association has taken advantage of the opportunity afforded by the War Secretary's appointment of a committee, with Mr. Winston Churchill as chairman, to inquire into anomalies of promotion in the Territorial Force and new armies, to put forward a memorandum on the subject. The first part of the memorandum was published in the SUPPLEMENT of March 17th, and the second, or supplementary, part in the SUPPLEMENT for this week. We will not attempt to appraise the relative value of the points raised, but would like to recall that the suggestion contained in paragraph 6 of the supplementary memorandum was put forward a year or more ago. We feel convinced that the Director-General would find his hands much strengthened and his anxieties diminished if he had upon his staff a Territorial medical officer with experience in administrative rank in peace and war.

THE APPEAL TO MEN UP TO FIFTY.

THE notification made by the Secretary of the War Office on May 12th, that it had been decided to open shortly two new groups for the voluntary attestation of men over the present military age—namely, one for men, married or single, not over 45 in January, 1917, and the other for men, married or single, who were between 45 and 50 at that date—does not, as we understand it, affect the position of medical men, and the Director of Recruiting has specifically stated that "the present extension of age for men for special corps will remain unaffected." Medical men between 41 and 45 have long been eligible for commissions in the R.A.M.C., and in June last we were authorized to state that the War Office had decided to give commissions in the R.A.M.C. to medical men between 45 and 55 willing to undertake whole-time general service in the United Kingdom. As was then pointed out, that decision afforded a great opportunity to medical men between 45 and 55, who could see their way to get free from civil obligations, to accept commissions in the R.A.M.C. with the home armies. Any medical man who now feels he can respond to the new appeal should not attest, but should communicate with the Central Medical War Committee (429, Strand, London, W.C.2), the Reference Committee of the Royal Colleges in London (Examination Hall, 8, Queen Square, W.C.1), or the Scottish Medical Service Emergency Committee (Royal College of Physicians, Edinburgh), as the case may be. The enrolment scheme has been very successful both in supplying the army with medical officers and in safeguarding the interests of the civil community, and it will be the wisest course for any medical man between the ages mentioned who considers he can be spared from the neighbourhood in which he practises to put his case before one or other of the committees. It is, of course, understood that the appeal is for volunteers; the Director of Recruiting, it may be noted, referred to the possibility of Parliament at some time raising the age for compulsion, but this again will not affect the position of medical men who enrol.

THE Library of the British Medical Association has received from Dr. Henry Rayner, formerly President of the Medico-Psychological Association, at one time editor of the *Journal of Mental Science*, a copy of vol. i of the *Asylum Journal of Mental Science* (1853-55). This volume is rare, and was missing from the series in the Library. It is, Dr. Rayner says, to be looked upon as a legacy from the late Dr. Hack Tuke. The title of the periodical was altered in the second volume to *Journal of Mental Science*, and Dr. Hack Tuke was appointed joint editor to that journal in 1880, and remained, we believe, connected with it until his death in 1895. Dr. Rayner was one of his successors in that office.

THE Central Control Board (Liquor Traffic) has appointed an advisory committee, consisting of Lord D'Abernon (Chairman), Sir G. Newman, M.D., Professor A. R. Cushny, F.R.S., Dr. H. H. Dale, F.R.S., Dr. M. Greenwood, jun. (Statistician to the Lister Institute), Dr. W. McDougall, F.R.S., Dr. F. W. Mott, F.R.S., Professor C. S. Sherrington, F.R.S., and Dr. W. C. Sullivan (Medical Superintendent State Criminal Lunatic Asylum, Rampton, Notts), to consider the conditions affecting the physiological action of alcohol, and more particularly the effects on health and industrial efficiency produced by the consumption of beverages of various alcoholic strengths, with special reference to the recent orders of the Central Control Board, and further to plan out and direct such investigations as may appear desirable with a view to obtaining more exact data on this and cognate questions.

Medical Notes in Parliament.

R.A.M.C. Officers Waiting for Work.—Mr. Watt, on May 11th, asked Mr. Macpherson whether, in the present shortage of doctors for service in France and elsewhere, there were doctors who had abandoned their practices months ago, had put on khaki, and were awaiting in various towns in England instructions from his department to proceed where they would be most useful, but who appeared to be forgotten by the department except in the way of the payment of their salaries. Mr. Macpherson said that any officers so situated were either awaiting passage or relief by officers who were unfit for foreign service. Until such reliefs were available it was not possible to deplete the commands at home of medical officers fit for general service. Mr. Watt: Does the hon. gentleman not admit that there are doctors who are waiting and doing nothing? Mr. Macpherson: They are either waiting their turns to go out or for reliefs.

Medical Practitioners in Combatant Units.—Replying to Mr. Watt, on May 15th, Mr. Macpherson said steps had been taken to withdraw medical practitioners from combatant units. All medical practitioners known to be non-commissioned officers and men were invariably offered commissions in the R.A.M.C. if fitted. If any specific case in which a medical man experienced difficulty in getting out of the ranks were brought to notice it would be looked into, and the same steps would be taken in regard to dentists.

Venereal Diseases Bill.—The Venereal Diseases Bill, as amended by Standing Committee of the House of Commons (after passage through the House of Lords) came before the House of Commons for report on May 15th.

Amendments were made in Clause 2 which designed to stop advertisements of remedies, etc., so as to make clear that the offer to treat persons with venereal disease should be an offence whether or not the offer was taken up, and to fix November 1st as the date for bringing the provisions of the clause into operation. The operation of the first clause, which prohibits treatment by unqualified persons, is to be made, as already explained, by areas, following upon the establishment of schemes for free treatment in those areas. Mr. Fisher stated that schemes had been prepared by 98 councils out of a total of 143.

On the motion for the third reading, Mr. Glyn-Jones returned briefly to the alleged grievance of the pharmacists, who wished in regard to these diseases the principle should be applied as it was in regard to treatment of other diseases under the National Insurance Act, that doctors should prescribe and pharmacists dispense. Sir Wm. Collins expressed confidence that the bill would achieve some of the objects aimed at, but thought that Clauses 1 and 2 still retained weak points. Mr. Dundas White brought a protest from Mr. Hayes Fisher by assuming his view

to be that unregistered practitioners were for practical purposes no good. Mr. Fisher interrupting here recalled how particularly he had said on the second reading of the bill that it was not intended to pursue this policy in reference to any other bill. Mr. White met with further difficulty in saying that Sir William Collins had suggested that it should be applied to other cases. Mr. Fisher replied this was an unintentional misrepresentation. Sir William Collins was an opponent of the general tendency to exclude all but the duly qualified practitioner. Sir William Collins offering personal explanation later said his object had been to show the inconsistency of suppressing the unqualified practitioner in one direction and not in another. That was all.

The bill was afterwards read a third time and passed. It now goes back to the Lords for consideration of the amendments made in the Commons.

Army Nurses.—Mr. Charles Roberts asked whether the Army Council had completed consideration of the interim and final reports on nursing issued by the special committee set up by the War Office on this subject; whether any recommendations of either of these reports had been carried out; whether the urgent fresh appeal for young women for nursing and Voluntary Aid Detachment purposes was made after consultation with the committee which had carefully considered the subject, and whether the two reports would now be published. Mr. Macpherson replied that the consideration of this report was not yet completed, but stated subsequently that he would lay a copy on the table of the House this week.

Medical Treatment of Soldiers' Widows and Orphans.—Replying to Major Chapple, Mr. Barnes said the Insurance Commissions were considering, at his request, how the medical treatment of widows and orphans of sailors and soldiers killed in the present war could best be provided. The whole question of medical service would be further dealt with in connexion with the proposal to establish a Ministry of Health.

Pensions and Gratuities.—Mr. Barnes has informed Mr. Pennefather that of the 31,590 sailors and soldiers discharged as medically unfit since the Pensions Ministry took over its duties on February 15th 81.9 per cent. had received pensions and 7.8 per cent. gratuities. Of the 13,540 so discharged since the new Order in Council and Royal Warrant came into force on April 4th 84.7 per cent. had received pensions and 15 per cent. gratuities. Out of 3,000 men who since the latter date had applied for reconsideration of refusals to pension them under previous warrants 367 had been given pensions and 404 gratuities, and the remaining applications, which had come in rapidly during the last few days, were in various stages of consideration. In reply to another question by Mr. Pennefather, Mr. Barnes said that if a discharged soldier in receipt of a pension for wounds or disability due to military service who re-enlisted would, in the event of his being again wounded or further disabled by causes due to military service, if the second disability was distinct from that which caused the first invaliding, and both disabilities continued, a fresh pension would be granted in addition to the original pension, provided that the total of the two pensions did not exceed the pension payable for the highest degree of disablement. If, however, the second invaliding was for the original cause or aggravation thereof, one pension would be granted based on the condition of the disability at the time of the second invaliding. Mr. Barnes, in a written answer to Mr. Stanton, stated that soldiers and sailors who as a result of injuries in the present war had been left without useful vision were granted pensions of 27s. 6d. a week, with a further grant up to 20s. a week for an attendant. These grants were apart from any earnings which the men might be able to get as the result of the careful and sympathetic training given at St. Dunstan's or at the affiliated Scottish National Institution at Newington House. During the training the Pensions Department supported the families of the men; after it their welfare was watched and assisted by the institutions named.

Medical Examinations of Men Called Up.—Mr. Hogge called the attention of Mr. Macpherson to the statement of the military representative at Wandsworth, on April 30th, that 5,400 men in the borough were being called up for medical re-examination, and were being examined at the rate of 200 a day, and whether he could state the average time given to each of the men. Mr. Macpherson: Two hundred men are called up each day for medical examination. In all cases where the recruiting officer considers it manifest that a man is permanently disabled and unfit for any form of military service, a statement of his disabilities is submitted to the President of the Recruiting Medical Board, and if that officer is satisfied that no good purpose would be served by having the man medically examined, a discharge certificate is sent to the man. A very large percentage of the men called up proves to be in this category. The average time devoted to each man medically examined by the Medical Board is from fifteen to twenty minutes. In these circumstances there was no necessary ratio between the numbers called and the time devoted to men examined.

THE WAR.

MESOPOTAMIA.

AMARA CLINICAL SOCIETY.

In our issue of January 6th, 1917, a report was published of a meeting held by the medical officers of the Kut-el-Amara garrison in the fifth month of the siege, at which beri-beri, scurvy, and abdominal wounds were discussed. We have now received the report of the first two meetings of the Amara Clinical Society, which was formed in somewhat happier circumstances by medical officers of the Mesopotamia Expeditionary Forces stationed at Amara, at the end of September, 1916. The A.D.M.S. Amara (Lieutenant-Colonel C. A. Stone, R.A.M.C.) was elected *ex officio* president, and a small executive committee was formed as follows: Lieutenant-Colonel E. W. W. Cochrane, R.A.M.C. (chairman), Lieutenant-Colonel S. Anderson, I.M.S., Major Grey Turner, R.A.M.C.(T.), Major F. P. Connor, I.M.S., Lieutenant F. R. Barwell, R.A.M.C.(T.C.), Major F. P. Mackie, I.M.S. (honorary secretary).

SCURVY.

The first meeting of the society was held on October 6th, when eighty-nine officers were present, and a discussion took place on scurvy.

Major F. P. Connor, I.M.S., pointed out the principal characters of the disease at present met with in Amara, and laid stress on the influence of environment in the causation of the disease. Captain Kamat, I.M.S., showed a series of five cases in various stages of the disease. He said that the questions of caste, race, and dietary had been carefully inquired into in a series of 130 cases, but no definite conclusion could be arrived at. Other debilitating influences, such as malaria, hook-worm disease, etc., were not proved to affect the incidence of scurvy. Local treatment was directed to the teeth, which should be scraped, and if pockets were present these should be swabbed out with hydrogen peroxide and quinine powder dusted along the margin of the gums. General antiscorbutic treatment was carried out on the usual lines, and a medicinal mixture of limejuice, rum, and tr. nucis vomicae given thrice a day.

A discussion then followed, in which Lieutenant-Colonel Palmer, R.A.M.C., laid stress on certain early symptoms to be looked for in the diagnosis of scurvy.

Major Heathcote Roberts, I.M.S., referred to the more serious complications of scurvy, such as amblyopia, cerebral and meningeal haemorrhage, infective pneumonia, gangrene, and haemothorax, all of which he had met with from time to time.

Major L. Reynolds, I.M.S., pointed out that scurvy often appeared under conditions where it would be least expected, and referred to cases which he saw in an otherwise healthy regiment in a place where fresh vegetables were abundant and freely partaken of. Although the condition of the gums was a valuable indication of the severity of the disease, it was apt to be misleading because markedly scorbutic persons might show healthy gums and teeth.

Major G. Grey Turner, R.A.M.C.(T.), speaking from surgical experience amongst British troops, referred to three groups of cases which he had observed: (1) Where the presence of scurvy explained the occurrence of otherwise obscure cases of haematoma and other haemorrhages; (2) where wounds or ulcers took on a sluggish and unhealthy character owing to the presence of scorbutic changes, and (3) where patients under treatment for enteric group diseases or dysentery developed spontaneous haemorrhages. These, he considered, were probably due to a diet of preserved milk, and comparable to scurvy rickets (Barlow's disease). The first and second groups responded readily to treatment, but in the third the prognosis was bad, as the condition indicated profound nutritional disturbance.

Captain McCallan, R.A.M.C.(S.R.), showed a specimen with perforation of the heart and of the overlying border of the lung caused by a stab from an Arab dagger.

Captain F. Chapman, R.A.M.C., gave a demonstration of the use of the new Rogers's cholera outfit which had just been issued to hospitals.

PARATYPHOID FEVER.

At the second meeting, on October 20th, the President in the chair, a discussion took place upon paratyphoid fever. The number of officers present was eighty-one.

Lieutenant B. E. A. Batt, R.A.M.C.(T.C.), and Lieutenant A. Feiling, R.A.M.C.(T.C.), read a paper on the clinical aspect of paratyphoid fever as they had found it in Mesopotamia. This was nearly always paratyphoid A. Their experience was founded on over 300 cases. The onset might be sudden or insidious—more commonly the latter. Headache, abdominal pain, and general weakness were the most prominent early symptoms. The cases with sudden onset were chiefly characterized by rigors and intense headache, with high fever, and had not infrequently been mistaken for heat-stroke. The average duration of the disease varied from nineteen to thirty-five days or more, exceptionally over forty days. The cardinal features in the symptomatology were discussed in detail, and, briefly, were found to be: (1) the type of the fever, emphasis being laid on the spiky character and tendency to undulations of the temperature chart; (2) the pulse, whose slow rate, soft and frequently dicrotic character had proved a point of considerable diagnostic value; (3) the appearance of the tongue, which was found with a relatively clean tip and edges; (4) the enlargement of the spleen, a nearly constant feature—when palpable, it felt harder and firmer than the average typhoid spleen; when not palpable, an enlarged area of splenic dullness could generally be demonstrated by percussion. In their experience the rash had not proved a constant and reliable sign. Complications were, on the whole, uncommon and unimportant with the exception of hyperpyrexia, which proved disastrous during the hot season, but with the advent of cooler weather was rarely seen. Bronchitis, bronchopneumonia and myocarditis were found in all the fatal cases. Phlebitis, parotitis with and without suppuration, and periostitis had occurred. Haemorrhage and perforation were uncommon. Of three cases of perforation in their series one survived. Diarrhoea had been decidedly uncommon, and constipation the rule. The coexistence of other diseases, notably malaria, sandfly fever and dysentery, produced a puzzling symptom complex. Their mortality had reached the high figure of 10.4 per cent., but it was significant to note that out of thirty-nine deaths thirty had occurred in the month of July, that is, in the hottest part of the summer. The most common cause of death was cardiac failure from a profound toxic myocarditis. In one case haemorrhage and in two cases perforation were responsible for the fatal issue. They had found the ulceration to be generally less extensive than in typhoid, with a greater tendency to involvement of the large bowel.

Captain Stevenson, I.M.S., then spoke on agglutinins. After a brief description of the close relationship between the members of the enteric group he addressed himself chiefly to the interpretation of results derived from agglutination tests carried out by the staff of the Central Laboratory, Amara. The diagnosis of typhoid fever from agglutination results was full of fallacies. The factor of previous inoculation had to be considered. A high reaction to the typhoid bacillus in such a case was of little significance unless it could be shown in subsequent examinations that the agglutination titre was an ascending one. Again, in infection by the paratyphoid A bacillus, the group agglutinin for the *Bacillus typhosus* often was the earliest to appear. As a rule, the true specific agglutinin for *Bacillus typhosus*, developed in the course of typhoid fever, appeared early; from the seventh day of disease it might rise rapidly, but it would remain high in the great majority of cases for weeks or months. During infection by *paratyphosus* A not only might the specific A agglutinin be developed, but the group agglutinin for typhoid and paratyphoid B were usually thrown up, the latter more rarely, and these group agglutinins might develop earlier than the true specific agglutinin, causing great difficulty in the true interpretation of results. Owing to the fact that this paratyphoid A agglutinin was so often transient, it followed that even in repeated tests it might be missed altogether. A guide to this would appear to be the behaviour of the group typhoid agglutinin, which sometimes appeared early and rose very high. But, unlike the typhoid specific agglutinin developed in typhoid fever, it exhibited a great tendency to fall quickly though not invariably. Of the paratyphoid B bacillus they had had little experience. Its incidence had diminished gradually among British troops, and during the last three months no case was found amongst Indians. The difficulty of interpretation of agglutination results would be heightened by the increasing use of T.A.B. vaccine.

Lieutenant-Colonel Palmer, R.A.M.C., stated that the most characteristic features of the disease in his experience were (1) fever, often of an undulatory character, and sometimes accompanied by singularly few symptoms, the tongue in many cases remaining surprisingly clean; (2) marked tendency to relapse; (3) absence of complications as a rule. To this, however, there was one striking exception: gall bladder involvement was exceedingly common in paratyphoid A infection, and pain over that organ a frequent symptom. In a series of cases he had seen in Mesopotamia a slight tint of jaundice or icterus was visible in nearly half, but how much of this was due to the hot weather was difficult to determine.

Major L. Reynolds, I.M.S., referred to cases he had seen in India in which paratyphoid fever was very mild, and might readily have been overlooked without blood culture.

Lieutenant G. W. Spencer, R.A.M.C.(T.C.), pointed out the importance, when dealing with large numbers of patients, of a schedule of systematized diets. By this means the danger of patients getting food which had not been ordered for them was reduced. It was his practice to give light food to patients if there was no distension of the abdomen, a normal stool, a clean tongue, and the patient had an appetite.

Major G. Grey Turner, R.A.M.C.(T.), drew attention to cholecystitis as a complication of the typhoid group. There were some few cases in which the clinical evidence of infection of the gall bladder was sufficient to justify a diagnosis of cholecystitis, almost certainly post-enteric in origin, but they cleared up under medical treatment.

ELASTIC PRESSURE IN DELAYED HEALING.

STABSARZT DR. LIEK, in an article on the beneficial effects of pressure in the delayed healing of gunshot wounds,[1] states that it was not uncommon to meet with wounds in which the healing process came to a standstill without any obvious local or general cause, such as foreign bodies or sequestra, renal disease or syphilis. This happened mostly in wounds of the lower limb, and it was possible that circulatory derangement was the essential factor in its production, as in varicose ulcer. Pressure was applied by an elastic bandage; the wound was dressed with boracic acid ointment, the foot and leg well padded with wool, and the elastic bandage applied over this, so as to exert considerable pressure. The bandage was replaced every four or six days, according to the amount of discharge. In twenty cases thus treated healing rapidly resulted. The following are instances:

1. A clean perforating wound near the middle of the leg. After nine weeks' treatment the apertures of entry and exit showed no signs of healing or reduction in size. Compression with the elastic bandage was then commenced and the wounds healed firmly in six days.
2. Comminuted fracture of tibia and fibula; wound infection; incisions. At the end of twelve months healing was complete, except for the presence of two ulcers about two inches in length in the region of the cicatrix. In the course of the next three months these showed not the least change or evidence of healing. On applying the bandage, which was replaced every third or fourth day, the wounds healed soundly in sixteen days.

Delayed healing was seldom observed in the arm, the circulatory conditions being more favourable there than in the lower limb. It was more frequent in wounds of the trunk, and here pressure could be applied by means of adhesive plaster.

HEALTH OF THE GERMAN ARMY AND NAVY.

SOME particulars of what the German authorities desire to be believed with regard to the health of the German army and the German navy have been published in editorial articles printed in the *Deutsche medizinische Wochenschrift* of January 18th and February 15th, 1917. It is therein stated that in the first year of the war the average monthly incidence of sickness in the German army was 120 per 1,000, and that the rate fell to 100 in the second year of

[1] *Deut. med. Woch.*, 1917, No. 4, p. 104.

the war. The following are given as the rates of each disease per 1,000 soldiers.

Diseases.	First Year.	Second Year.
Small-pox	0.01	—
Typhoid fever	5.60	1.40
Typhus fever	0.03	0.08
Dysentery	2.80	1.80
Asiatic cholera	0.32	0.24
Intermittent fever (*Wechselfieber*)	0.17	0.80
Scarlet fever	0.18	0.15
Measles	0.07	0.06
Diphtheria	0.24	0.57
Tuberculosis	2.90	1.70
Pneumonia	6.80	4.00
Pleurisy	7.70	6.00
Nervous diseases	24.30	21.50

The fall in the incidence of small-pox, cholera, and typhoid fever was attributed largely to prophylactic inoculation, and the results were considered the more striking as the campaigns of the second year were, it is said, conducted in less healthy regions than those of the first year. The rise in the incidence of diphtheria was observed also in the civil population; its cause is not elucidated. Of the wounded about 70 per cent., it is claimed, returned to the front; others were fit for garrison or other duty, and only 6.4 per cent. were totally unfit. About 1,250 soldiers were blinded.

It is stated that in the first year of the war the incidence of sickness in the German navy was 315.15 per 1,000, and that in the second year it fell to 287.19. The average annual rate of incidence of sickness for the five years of peace preceding the war was 410.86. The average monthly incidence of sickness in the first year of the war was 26.26 per 1,000, in the second year 23.93 per 1,000. The following table purports to give the relative incidence of certain specified diseases, the figures in the last column giving the average annual incidence of each disease in the five years before.

Diseases.	First Year.	Second Year.	Peace Time.
Scarlet fever	0.39	0.78	0.23
Diphtheria	0.09	0.30	0.25
Typhoid fever	0.17	0.27	0.13
Typhus fever	—	—	—
Tuberculosis of the lungs	1.39	1.64	1.23
Tuberculosis of other organs	0.44	0.45	0.62
Dysentery	0.08	0.08	0.11
Cholera	—	—	—
Cerebro-spinal meningitis	0.01	0.03	0.03
Acute articular rheumatism	2.81	2.82	5.07
Total of general diseases	21.36	19.15	21.22
Nervous diseases	11.79	10.13	11.15
Diseases of the respiratory organs	35.87	27.00	44.83
Diseases of the circulation	8.49	8.00	10.80
Diseases of digestion	56.48	56.35	78.45
Diseases of the urinary tract	7.40	9.14	10.00
Diseases of the eyes	5.58	3.43	8.90
Diseases of the ears	11.63	8.14	14.17

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

SURGEON-CAPTAIN F. HUNTON, R.A.M.C.(T.F.).

Surgeon-Captain F. Hunton, R.A.M.C.(T.F.), was killed in action on May 6th. He was the youngest son of the late John Hunton of Stockton, and was educated at Newcastle-on-Tyne, graduating M.B. and B.S.Durh. in 1891, and M.D. in 1893. He then went into practice at Sedgefield, Terry Hill, where he held the appointments of medical officer of the Sedgefield Union Workhouse and Fever Hospital, also of medical officer, public vaccinator, and medical officer of health of Sedgefield Rural District. He took a commission as surgeon-lieutenant in the Northumberland Hussars (Yeomanry) on December 17th, 1914, and was promoted to surgeon-captain after a year's service.

Died on Service.

CAPTAIN P. C. MACRAE, R.A.M.C.

Captain Patrick Cameron MacRae, R.A.M.C., died on service in March. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1915, and soon after took a commission as lieutenant in the Special Reserve of the R.A.M.C., being promoted to captain after a year's service.

CAPTAIN K. K. MUKERJI, I.M.S.

In the casualty list published on May 9th Captain Kalyan Kumar Mukerji, I.M.S., is reported to have died as a prisoner of war in Turkish hands. He was a member of the garrison of Kut, under General Townshend, which surrendered in April, 1916. He was born on October 24th, 1882, and educated in the Calcutta Medical College, where he took the diploma of licentiate in medicine and surgery in 1906, subsequently taking the diplomas of L.R.C.P.Edin. and the D.P.H. at Cambridge in 1908. He entered the I.M.S. as lieutenant on January 29th, 1910, and became captain on January 29th, 1913. At the beginning of the war he was medical officer of the 8th Rajputs.

Lieutenant and Quartermaster E. C. J. Curling, R.A.M.C.

Died of Wounds.

CAPTAIN G. S. BLANDY, M.C., R.A.M.C.

Captain Gurth Swinnerton Blandy, R.A.M.C., was reported as having died of wounds, in the casualty list published on May 12th. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1902, and M.D. in 1912. After filling the posts of house-physician at the Norfolk and Norwich Hospital, senior house-surgeon of the Scarborough Hospital and Dispensary, and assistant medical officer of the Norfolk County Asylum at Thorpe, he became senior assistant medical officer of the Middlesex County Asylum at Napsbury, St. Albans. When the war began he left that post to join the army, took a temporary commission as lieutenant in the R.A.M.C. on August 14th, 1914, and was promoted to captain on completion of a year's service. He received the Military Cross on June 3rd, 1916.

Accidentally Killed.

CAPTAIN C. B. BURDEN, A.A.M.C.

Captain Clive Britton Burden, Australian Army Medical Corps, died in St. George's Hospital on May 8th, aged 25, of injuries received by falling under a train from the platform of Victoria Station. He was the elder son of Mr. J. B. Burden of Adelaide, and had recently been invalided from the front.

Wounded.

Captain E. W. Adcock, R.A.M.C. (temporary).
Captain A. M. Alcorn, R.A.M.C. (temporary.
Captain F. R. Armitage, R.A.M.C.(T.F.)
Captain T. D. Dickson, R.A.M.C.(temporary).
Captain J. Fraser, R.A.M.C.(temporary).
Captain H. G. Hobson, R.A.M.C. (temporary).
Captain J. D. Marshall, R.A.M.C. (temporary).
Captain J. M. Moyes, R.A.M.C. (temporary).
Captain C. F. Searle, R.A.M.C.(T.F.).
Captain H. D. Smart, R.A.M.C.(temporary).
Captain O. C. S. Tandy, R.A.M.C.(S.R.).
Captain P. E. Voss, Australian A.M.C.
Lieutenant J. Kilroe, R.A.M.C. (temporary).
Lieutenant G. E. Spicer, R.A.M.C.(temporary).
Lieutenant J. Young, R.A.M.C. (temporary).
Lieutenant and Quartermaster R. J. Fleming, R.A.M.C.

DEATHS AMONG SONS OF MEDICAL MEN.

Buckell, C. J. A., Second Lieutenant Norfolk Regiment, only son of W. R. Buckell, F.R.C.S., of Salmon Arm, British Columbia, killed April 19th, aged 26. His commission was dated April 21st, 1915.

Clapham, Graham Windyer, Second Lieutenant Royal Field Artillery, second son of Dr. Lawrence Clapham of Thorney, near Peterborough, died of wounds in France on May 10th, aged 36. He was educated at Epsom College, and was farming till the outbreak of war. He enlisted in the 2nd King Edward's Horse in September, 1914; served in France from June to December, 1915, as a sergeant in that regiment. He received a commission in the Royal Field Artillery in January, 1916, and had been in France with his battery since July, 1916.

Clapperton, James Hugh, Major Royal Field Artillery, third son of the late Dr. James Clapperton, of Broughton, Hants, died on May 7th of wounds received on April 30th. He took a commission as second lieutenant in the 3rd Northumbrian Ammunition Column (T.F.), on March 30th, 1915, and had risen to acting major by September, 1916, in less than a year and a-half.

Cooper, Henry Weatherley Frank, Second Lieutenant Royal Fusiliers, only child of the late Dr. Thomas Henry Cooper, of Hampstead, died of wounds on April 29th. He was educated at Cambridge, where he had graduated B.A.

Humphrey-Davy, D. N. O'Neale, Second Lieutenant Hampshire Regiment, younger son of Dr. A. Humphrey-Davy, of Bournemouth, killed February 1st. He was formerly a cadet at Magdalen College, Oxford.

McConaghey, Maurice E., D.S.O., Lieutenant-Colonel Royal Scots Fusiliers, second son of the late Colonel John McConaghey, I.M.S., killed April 23rd, aged 39. He got his commission on December 15th, 1897, and after serving with his regiment through the South African war, when he was present in the actions at Belfast and at Colenso, and in the relief of Ladysmith, receiving the Queen's medal with four clasps, and the King's medal with two clasps, was promoted to captain on January 22nd, 1902. Before the war he was adjutant of the 8th Lanark (Territorial) Battalion of the Highland Light Infantry. Rejoining the Royal Scots Fusiliers at the beginning of the war, he was promoted to major and acting lieutenant-colonel, was severely wounded at Ypres, and received the D.S.O. On rejoining, he was posted to the command of another battalion of the regiment.

McKay, Philip S., Second Lieutenant King's Own Scottish Borderers, youngest son of Surgeon-Major P. B. McKay, R.A.M.C.(T.F.), of Doncaster, killed April 14th, aged 28. He was educated at Sedbergh School, got his commission on November 19th, 1915, and went to the front in July, 1916.

MacVicar, Neil, Second Lieutenant Seaforth Highlanders, only son of Dr. Colin MacVicar, Dundee, died of wounds recently, aged 22. He was educated at Harris Academy, at Dundee High School, and at University College, Dundee, where he was a third year medical student before he took a commission in July, 1916. He went to the front in August, and was wounded in the battle of the Somme at Beaumont-Hamel.

Mapleson, Gerald Horsley, Second Lieutenant Queen's Royal West Surrey Regiment, youngest son of the late Dr. Horsley Mapleson, of London, killed April 26th, aged 21.

Newton, John, Second Lieutenant Honourable Artillery Company, younger son of the late Dr. W. T. Newton, of London and of Lakenheath, Suffolk, killed April 24th, aged 21.

Orr, John C., Second Lieutenant Royal Berkshire Regiment, son of Dr. W. R. Orr, of East Finchley, killed April 28th, aged 19. He was educated at Highgate School, where he got his football colours, and was in the O.T.C., and got his commission from Sandhurst in October, 1916, going to the front last February. His elder brother, Second Lieutenant J. K. Orr, of the Middlesex Regiment, was reported missing on July 1st, 1916, and is presumed killed.

Profeit, Leopold, Captain King's Own Shropshire Light Infantry, youngest surviving son of the late Dr. Alexander Profeit, Commissioner to Queen Victoria at Balmoral, killed April 25th. He was born on April 7th, 1877, the birthday of Prince Leopold, after whom he was named; was educated at Aberdeen University and adopted the stage as a profession, having played with Sir Johnston Forbes Robertson. He enlisted in the Public Schools Battalion at the beginning of the war, got a commission in December, 1914, and became captain in August, 1915.

Purves, Walter Douglas Laidlaw, Lieutenant East Lancashire Regiment, youngest son of Dr. Laidlaw Purves, of London, killed April 28th.

Sandford, Charles V., Second Lieutenant Middlesex Regiment, son of the late Dr. Sandford, died of wounds on May 7th, aged 45. He was an actor by profession, and, though over age, joined the Artists' Rifles in 1915, subsequently getting a commission in the Middlesex. He had been invalided home, and returned to the front in March last.

MEDICAL STUDENT.

Ainslie, Archibald, Second Lieutenant King's Own Scottish Borderers, youngest son of A. Ainslie, of Dolphinton, Tasmania, killed April 19th, aged 23. Before he joined the army he was a medical student at Edinburgh University.

We are informed that Captain Stanley James Linzell, M.B., M.C., R.A.M.C., whose death in action was recorded in our issue of April 28th, p. 560, had also been awarded the decoration of *Croix de Guerre*, which has been duly forwarded to his mother.

[*We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.*]

HONOURS.

A DISPATCH from Sir Douglas Haig, dated April 9th, 1917, contains a list of officers, ladies, non-commissioned officers, and men serving or who have served under his command whose distinguished and gallant services and devotion to duty he considers deserving of special mention. The lists are being published in special supplements to the *London Gazette;* that for the medical service of the army is not yet available.

The following medical officers are included in the list of officers connected with the Royal Navy: Temporary Surgeon H. B. Padwick, D.S.O., R.N.; Temporary Surgeon J. N. M. Ross, M.B., R.N.

A supplement to the *London Gazette*, issued on May 10th, contains a list of honours awarded by the King to officers and men of H.M.S. *Broke* and *Swift* for their services in the recent action with five or six German destroyers in the Channel, during which two enemy vessels were sunk. The list of officers receiving the Distinguished Service Cross includes Surgeon-Probationer Christopher Thomas Helsham, R.N.V.R. (*Broke*), and Surgeon-Probationer John Swift Westwater, R.N.V.R. (*Swift*), who "worked with great energy and ability in attending to the wounded."

A supplement to the *London Gazette* of May 11th contains a list of decorations conferred upon officers and warrant officers in recognition of gallantry and devotion in the field. Among the recipients of the Military Cross is—

Captain Stanley Sextus Barrymore Harrison, R.A.M.C., attached South Staffordshire Regiment.

For conspicuous conduct and devotion to duty. He worked continuously for ten hours under very heavy fire and was responsible for saving many lives. He displayed great courage and determination throughout. He has on many previous occasions done fine work.

The Military Medal for bravery in the field has been awarded to six non-commissioned officers and men of the R.A.M.C. and three of the Canadian A.M.C.

A supplement to the *London Gazette* of May 12th contains a list of officers receiving the D.S.O. for miscellaneous services and includes the name of Lieutenant Commander William Wybrow Hallwright, R.N., whose death we recorded in our last issue. He was the son of Dr. Matthew Hallwright of Edgbaston.

FOREIGN DECORATIONS.

Among the recipients of the Order of Chevalier of the Legion of Honour conferred by the President of the French Republic for distinguished services rendered during the war is Surgeon John D. Milligan, M.B., R.N.

A special supplement to the *London Gazette* issued on May 15th contains a list of Russian decorations awarded in July, 1916, to British and Indian officers and men for distinguished services rendered in the course of the Mesopotamia campaign, and the King has granted unrestricted permission in all cases to wear decorations and medals. The list includes the following members of the R.A.M.C. and I.M.S.:

Order of St. George (4th Class): Captain J. A. Sinton, V.C., I.M.S.

Order of St. Anne (2nd Class with Swords): Lieutenant-Colonel and Brevet Colonel J. M. Sloan, D.S.O., M.B., R.A.M.C.

Order of St. Stanislas (2nd Class with Swords): Lieutenant-Colonel and Brevet Colonel M. H. G. Fell, R.A.M.C.

Cross of St. George (2nd Class): Sub-Assistant Surgeon Karta Ram, I.S.M.D.; (4th Class): Assistant Surgeons G. H. Blaker and E. A. Cotton, I.S.M.D.; Staff Sergeant D. Brown, R.A.M.C.

Temporary Captain Arthur F. G. Kerr, M.D., R.A.M.C., has received the Royal licence and authority to wear the Insignia of the 4th Class of the Order of the White Elephant conferred upon him by the King of Siam in recognition of valuable services rendered.

NOTES.

MEDICAL WORK IN THE ARRAS AREA.

CORRESPONDENTS in describing the fighting of the London Regiments spoke highly of the work of the R.A.M.C. Thus the *Times* correspondent, on May 11th, wrote:

The troops are loud in praise of the whole medical staff and of the stretcher-bearers, and of one captain of the R.A.M.C. especially, and one orderly, who attended the wounded and superintended the stretcher-bearers under conditions of great danger for several hours, and seemed to bear charmed lives.

The *Daily Telegraph* correspondent, speaking of the Australians at Bullecourt, wrote on May 13th:

All the Australian officers pay a high and touching tribute to the work of their stretcher-bearers, who were superb in courage and self-sacrifice. I have seen the ground they had to cross, and I know the evil and the peril of it. But they went forward with the infantry, and day after day crossed this country in the open with their heavy burdens, never stopping to glance at bursting shells on either side of them, regardless of their own lives, so that they could save their comrades. Unfortunately, the enemy did not respect the ambulances, though they could clearly see the sign of the Red Cross, but sniped them continually with shells and shrapnel bullets as well as the stretcher parties who had more faith in German chivalry, and for that reason walked deliberately in the open so that they could not be mistaken. The percentage of mortality among these men was rather higher than that of the infantry themselves, and that is a proof of their supreme valour.

The same correspondent, writing of the attack on Roeux, confirms the statement that our casualties have been very light and those of the enemy very heavy.

NEURASTHENIC WAR PENSIONERS.

The Hospital for Epilepsy and Paralysis and Other Diseases of the Nervous System, Maida Vale, was founded fifty years ago. During its growth it has accepted responsibility for the treatment of functional nervous disorders arising in civil and industrial life, and since 1896 has attempted with success to act as third party between employer and employee under the Workmen's Compensation Acts. It has now established a branch for selected cases suffering from functional nervous disorder at Highfields, Golders Green, in a building formerly a girls' school. It contains accommodation for 150 patients, including 35 single bed wards, and stands in extensive well wooded grounds. It provides isolation beds and arrangement for local and general massage, an electrical department, gymnasium, workshops. Organized games are provided. An employment bureau and after-care arrangements are provided in conjunction with the local pension committee. Men who enter the hospital will receive a pension from the Ministry, and wives and children of married men separation allowance.

England and Wales.

AT the annual meeting of the Medical Society of London on May 14th Sir StClair Thomson was elected president, Mr. Hugh Lett and Dr. Edmund Cautley honorary secretaries, and Dr. Herbert R. Spencer honorary secretary for foreign correspondence.

LOCAL AUTHORITIES AND FOOD CONTROL.

The Local Government Board, acting by arrangement with the Food Controller, has issued an order conferring on local authorities and their officers, under the Defence of the Realm Regulations, powers and duties to enforce certain provisions contained in orders made by the Food Controller. These orders include those dealing with the price of milk, confectionery sugar, the manufacture of bread, flour, cake, and pastry, and the conditions of sale of food and public meals. The Local Government Board suggests that sanitary inspectors, and other officials whose duties take them about their districts, should make inquiry as to the operation of the orders in the course of their usual occupations, while local authorities are reminded that they are authorized to prosecute offences against the provisions of the Food Controller's orders.

REFRESHMENT HOUSE EXPERIMENT IN CARLISLE.

The experiment in State management of the supply of intoxicants is, we are informed by Dr. Henry Barnes of Carlisle, going very well in that city. The number of licences acquired in Carlisle itself was 116, but two new premises have been opened for the supply of food at which beer is sold. The number of licences suppressed down to April, 1917, was 42, so that the net decrease is from 116 to 76. In the country districts surrounding the city the licensed houses have been, or will shortly be, reduced from 82 to 52. At the Gretna Tavern in Carlisle the trade in food is over 75 per cent. of the total takings. Recently the sale of spirits has been prohibited in Carlisle and Gretna district on Saturdays; in Longtown it has been entirely suppressed. The number of convictions in Carlisle in the three months (April, May, June, 1916) preceding the introduction of direct control was 351. In the first quarter of this year it was 159. The experience gained of the results of the direct control of the liquor trade has justified the Central Control (Liquor) Board in drawing the following broad conclusions:

(*a*) That, by extinguishing private interest in the sale of liquor, and by establishing a strict system for the control and inspection of public-houses, it is possible both to reduce excessive drinking in a very marked degree, and to ensure that restrictions, such as those imposed by the Board's orders, shall be effective to an extent impossible under conditions of private management, and of ill-regulated competitive trading;

(*b*) That in houses in which liquor can be sold under conditions of comfort and decency, and in which facilities are provided for recreation and for the sale of food, not only is supervision made easier, but customers are less inclined to drink to excess than they are in houses which have been designed as mere drinking bars;

(*c*) That many of the people who frequent public-houses desire food as well as drink, and that, whatever the régime, the attempt to meet this demand, duly safeguarded against possible abuse, should be encouraged.

(*d*) That under a unified system, such as is necessarily involved in State management, arrangements can be made to regulate the conduct of the trade in order to meet local requirements or temporary emergencies.

MEDICAL WOMEN AND A MINISTRY OF HEALTH.

At a meeting of the London Association of Medical Women on May 8th, Dr. Helen Boyle in the chair, Dr. Jane Walker, in opening a discussion on the advisability of instituting a Ministry of Health, said that the present method of dealing with health problems did not meet the public need. Neglect of health in early life led to such physical defects as were now found in the many recruits pronounced unfit for general service. The whole health system of the country was chaotic and was dealt with by at least eight departments, the three chief being the Local Government Board, the Board of Education, and the National Insurance Commission. These all required unifying. Dr. Walker recommended the institution under a Ministry of Health of a salaried State Medical Service which would replace the National Insurance Scheme. It would be possible to institute special inquiries whenever a disease became prevalent; housing would be improved and overcrowding diminished. Dr. Christine Murrell doubted whether the relation between patients and their doctors could be preserved under a State Medical Service. The question of curative treatment also needed much thought and consideration before any decision was reached. Dr. Alice Benham, a member of the deputation from the British Medical Association to Lord Rhondda, spoke of the scheme now being drawn up by the Association (SUPPLEMENT, May 5th, p. 88). There was, she said, a general feeling that the Insurance Act, as such, was dead, and needed complete reorganization. Voluntary hospitals should continue, aided by a grant from the funds. Dr. Mildred Burgess laid stress upon the present difficulties of obtaining treatment for patients noted as requiring it on inspection at infant welfare centres, etc.

Dr. Sophia Jevons thought the school medical inspectors should also carry out treatment. Dr. Thornett-Johnson contended that under the present system the medical profession did far too much unpaid work and thought that this might be remedied under a Ministry of Health. Dr. Mary Bell advocated either a rota of visiting doctors at hospitals or a lower retiring age, so as to give younger practitioners an opportunity of gaining experience. Dr. Helen Boyle said that if a State Medical Service were to do away with the admirable relations between patients and medical practitioners she could think of nothing which would compensate for this loss. The red tape, apparently inseparable from all Government services at present, would prove disastrous in medicine. Competition was in many respects stimulating and good, whereas a fixed salary was very apt to be accompanied by a fixed and stereotyped mentality and practice.

Dr. Jane Walker, in reply, said that the State Medical Service was absolutely opposed to the insurance system and was much more comprehensive. Salaries would be equalized and there would be a limited choice of doctor.

Scotland.

IN view of the fact that owing to the calling up of more doctors in Edinburgh the attendance on 36,000 insured persons would have to be undertaken by forty-seven doctors left, it was determined, at a meeting of the representatives of the insurance and panel committees, to establish three bureaus for consultations, attendances, and receipt of messages. It is suggested that the bureaus should be open daily, except Sundays, and that two doctors should be in attendance in rotation.

THE HIGHLANDS AND ISLANDS MEDICAL SERVICE BOARD.

The Highlands and Islands Medical Service Board was constituted in 1913 for the purpose of improving the medical and nursing service in the Highlands and Islands of Scotland and now presents its annual report for the year 1916. Owing to the difficulties of providing doctors at present and of replacing those who have gone on active service, it has not been possible to carry out fully the schemes formulated by the Board, and temporary measures have had to be adopted in many areas. With regard to the medical service, three main questions had to be dealt with: First, what was a reasonable charge for medical attendance to persons of limited means; second, what classes of persons should be eligible; and third, on what principles should the medical practitioners be remunerated. After consideration it was resolved that the scheme should apply to the families and dependants of insured persons, uninsured persons of the crofter and cottar classes and their families and dependants, and that the fee chargeable to such persons should not exceed 5s. for a first visit and 2s. 6d. for each subsequent visit, additional moderate charges being made for medicines supplied by the doctors, and the patient paying any chemist's charges where the doctor did not dispense. For confinements the fee was to be £1, to include any subsequent visits necessary. Where two or more practitioners practise in an area the patients are at liberty to choose which they prefer, but it is understood that practitioners called to

cases outside the area where they have undertaken to give attendance under arrangements with the Board may charge what fees they like. It is an essential part of the scheme that fees under the Board's arrangements should be the same whatever the distance of the patient from the doctor's surgery. In determining the proper remuneration for the doctors, the Board had to consider how the introduction of low uniform fees would affect the doctors' income and the receipts from all professional sources of income, as well as the working expenses of the practice, and all the circumstances in each case had to be taken into account. In some instances it was necessary to guarantee a fixed income in order to secure or retain the services of a doctor in certain districts, and it is suggested that the Board's assistance should take the form of an annual grant to be adjusted as found necessary. It is stated that, except in a few parishes, the scheme has been in operation since the beginning of 1916, and agreements have been made with 141 doctors; the first year's experience is regarded by the Board as quite satisfactory.

The nursing service, in spite of the difficulties arising from the war, has been carried on satisfactorily. Grants have been made to thirty-nine nursing associations, the Board's liability amounting to £2,100. The new duties placed upon local authorities and the grants now available under maternity and child welfare schemes will materially assist the Board in the future, though it will be necessary to secure a unification of the service if overlapping is to be avoided.

The development of the other schemes of the Board is to a great extent in abeyance for the period of the war, but they will deal with such questions as grants to hospitals, houses for doctors and nurses, special emergencies such as payment of consultants' fees, conveyance of patients to hospitals, and payment of locumtenents where doctors are prevented by illness from attending to their duties. In some districts it has not been possible to enter into agreements with any doctors, and temporary grants had been made to practitioners amounting to about £323. The annual grant-in-aid amounts to £42,000, and as no unexpended balance has to be surrendered, the total income in the financial year ending March, 1916, amounted to rather over £129,000. The liabilities of the Board in respect of the year 1916 were £20,482 for the medical service, £2,116 for the nursing service, £480 for the hospital service, £517 for houses for doctors, and £224 for special emergencies. The balance to the credit of the Board at the end of 1916 was £98,540, while the grant of £42,000 for 1916–17 would be paid before the end of March, 1917. The Board regrets that owing to the war none of its schemes have yet been fully developed, and future conditions may make modifications necessary in all the schemes. The report concludes with a list of all areas in which arrangements have been made with medical practitioners, with their names and addresses. It is impossible to estimate the enormous boon which the services under the Highland and Islands Board will confer on the poorer classes in these parts of the kingdom.

Correspondence.

THE LIFE-HISTORIES OF THE LOWER BACTERIA.

SIR,—In the paper on the above subject which appeared in the BRITISH MEDICAL JOURNAL of May 5th I stated:

1. That the occurrence of aberrant morphological types of the lower bacteria has in the past been recorded by numerous observers, the usual explanation of such occurrence being the presence either of contamination, or of mutation, or of involution.
2. That the correct explanation had hitherto been missed, apparently because observation of the development of these aberrant forms in the warm stage had not been carried out.
3. That in consequence the question of these aberrancies representing phases in bacterial life-cycles occurring in orderly sequence appeared not to have been previously raised.

In addition to these statements I produced evidence which, from the fact that it was largely based on observations of the development of living organisms on the warm stage, appeared to me conclusive that the life-cycle of the lower bacteria is a highly complex process. And I laid particular stress on this evidence because I fully recognized that it is at present impossible to draw conclusive deductions from the use of any other method, whatever its nature.

To-day I have received from Dr. Ainley Walker a letter in which he points out, in the most charming manner possible, my error in supposing that the question of the true explanation of aberrant morphological types of bacteria had not previously been raised. This error, arising as it did from an incomplete search through the literature, I deeply regret. In the BRITISH MEDICAL JOURNAL of July 2nd, 1904, Dr. Ainley Walker and Dr. W. Murray recorded some of the results of their studies in bacterial morphology, in cultures containing stains, and definitely suggested the "possibility of an unsuspected complexity in the life-history" of the micro-organisms mentioned. These were the *B. typhosus*, the cholera vibrio, and a coliform bacillus. Dr. Walker in his letter frankly states that he has not yet been able to convince himself that he could absolutely prove his thesis of 1904, though his four photomicrographs of dried preparations, together with the single photograph of a colony impression, go as far as anything—short of warm stage studies of living organisms—can go in showing the likelihood of the truth of the thesis. The evidence his photographs present of true branching, of mycelial-looking growth, and of long flagellated filaments, together with the evidence he mentions in his letter of the presence of minute vegetative forms,[1] is, in fact, highly suggestive of complex life-cycles, though he would be the first to admit that his recorded evidence does not go beyond suggestion. As, however, I have shown in my paper, the suggestion has been now "converted into demonstration" by observation of growth of single living individuals at suitable temperatures. Moreover—and this should meet objections raised by exponents of the involution theory—these aberrant morphological types can, as I have recorded, be found, if diligently searched for, in ordinary laboratory cultures of a few hours old.

In concluding, I should, perhaps, note that in an admirable contribution on the parasitic fungi by Professor Percy Groom to the 1913 edition of Muir and Ritchie's *Manual of Bacteriology*, the theory is quoted that "bacteria represent merely oidial conditions of very degenerate fungi." Professor Groom does not give the reference, but it is possible—and Dr. Ainley Walker may, perhaps, be himself the author referred to—that further search might show that similar theories have been propounded prior to 1904. This, however, would not absolve me from the lack of knowledge of Dr. Walker's work, and of his theory, which is the occasion of this letter.—I am, etc.,

London, W., May 11th. EDWARD C. HORT.

THE DANGER OF SMALL-POX.

SIR,—In reply to Dr. Millard's letter in your issue of April 21st, I said that I did not see any reason why vaccination should not continue to be compulsory in infancy and be repeated after the lapse of five or seven years. Dr. Millard now retorts that a single revaccination at the age of 5 will not protect "for life or anything like it." I reply that quite possibly it may not—I never said it did. It would, doubtless, give protection during childhood and early adolescence, and, should danger subsequently arise, I can see no reason why the operation should not be repeated. Does Dr. Millard?

Why, may I ask, is compulsory revaccination not "practical politics"? "We have done without it hitherto," says Dr. Millard. No doubt, say I, but then we have suffered more from small-pox in the past than Germany, where revaccination at the age of 12 is compulsory. Dr. Millard points with continued satisfaction to the "several serious outbreaks" stated to have occurred in that country during the present war, but I submit that scarcely any details of these outbreaks have as yet come to hand, and until we know more about them I maintain that no deduction as against the efficacy of vaccination or revaccination can be drawn from them. To hint, as Dr. Millard seems to do, that the outbreaks in question are the *result* of compulsory revaccination is to run counter to all experience. But perhaps Dr. Millard does not quite mean that.

[1] In 1899 it was experimentally shown by Professor Adami that the "colon bacillus" appears under certain circumstances to give off very minute vegetative forms, in addition to exhibiting other aberrant morphological types. Adami, Abbott, and Nicholson: Diplococcoid Form of the Colon Bacillus, *Journ. of Experim. Med.*, 1899, p. 349 et seq.

Dr. Millard "definitely challenges" my statement that in vaccination we possess an admittedly certain means of defence. Yet in the very next paragraph he admits, in reply to Dr. Archibald Kidd, that "infant vaccination protects the individual." That is all I maintain. The nearest approach to "certainty" we can reasonably hope from any such procedure is that obtained by an attack of the naturally acquired disease. Some people contract small-pox more than once. Some persons, even though vaccinated, acquire small-pox. For practical purposes the defence afforded by recent vaccination is as reliable as anything of the kind can well be. If every individual were vaccinated, every individual would be protected and the disease could not spread. It would seem as though, in Dr. Millard's view, vaccination ceases to be a certain means of defence when it becomes a "State institution." Apparently it retains its efficacy in its private capacity!

To speak of inoculation as "producing similar or even more striking statistics" than vaccination is, I submit, gravely misleading. Dr. Millard has surely forgotten the history of that procedure. May I remind him that out of the first 845 persons inoculated in England no fewer than 17 died of small-pox? that the inoculated is no less dangerously infective than the naturally acquired disease? and, lastly, that despite a fair trial amongst populations desperately anxious to find some means of protecting themselves against the prevalent pestilence, the practice of inoculation was gradually given up, and disappeared completely on the introduction of vaccination? Is Dr. Millard not aware of these facts? I feel sure he does not intend to be misleading, so that his is evidently a case of temporary amnesia.

It is with reluctance, Sir, that I trespass so largely on your space, but Dr. Millard's is a serious heresy, threatening as it does the welfare of our country at a critical period. Hence the time and labour spent in refuting it are, perhaps, well expended.—I am, etc.,

E. J. MCWEENEY,
Pathological Department,
University College, Dublin.

May 14th.

*** This correspondence has already extended to great length, and, while ready to receive any correction of matters of fact, we cannot undertake to continue it.

DEATH FROM HIGH EXPLOSIVES WITHOUT WOUNDS.

SIR,—With reference to the interesting letter by Dr. Lewis Thomas of May 5th, it must be borne in mind that any change of atmospheric pressure applied to the whole body is equally and instantly transmitted through the fluids of the body to all its parts. Thus, when the circulation in the frog's web is projected on the screen, and the frog (enclosed in a chamber with glass windows) is suddenly submitted to twenty atmospheres of pressure, no change in the capillary blood flow is to be observed; so, too, when the pressure is suddenly released. The parts of the body which may be injuriously influenced by a sudden vacuum are those parts which contain gas—for example, the lung lobules may be made emphysematous by the sudden distension of the air within them, which is unable to escape rapidly enough through the bronchioles. Again, gas in the intestine may expand and produce distension of the guts and thus interfere with the circulation. Gas bubbles may be set free in the blood by the sudden evacuation of a chamber in which an animal is placed, but it is not at all easy to produce this effect. The bubbles may block the circulation, just as occurs in compressed air workers, divers, etc., when they are too rapidly decompressed. The air by its elasticity has an enormous capacity of shielding the body from the shattering effect of explosions; thus animals have experimentally been proved to survive the explosion out in the open of large charges of gun-cotton a dozen feet or so away from them, so long as the explosion did not shatter them by hurling stones, etc., as missiles. In closed places we have to consider the possibility of a pressure exerted on the body sufficient to kill the tissues. Between three or four hundred atmospheres of pressure will kill shallow water animals, the frog's heart and muscle, etc. Water enters into the tissue substance, the physico-chemical equilibrium of which is altered so that it increases in weight and undergoes a kind of coagulation. Deep-sea organisms must be immune to this effect of water pressure. Is it possible in dug-outs that men are submitted to some hundreds of atmosphere of pressure by the bursting of a big shell? Another thing to consider is the production of a high concentration of poisonous gas—for example, the effect of carbon monoxide of a concentration equal to several atmospheres. Exposure to fifty atmospheres of pure oxygen, for example, will convulse and kill animals. May not such poisoning be a very probable cause of death?—I am, etc.,

London, May 15th. LEONARD HILL.

THE SOLDIER'S HEART.

SIR,—Your leading article and the correspondence that has resulted deal with a very important subject.

Those of us who are constantly handling men on boards for determining to what category they should belong, are frequently meeting cases that have been diagnosed as "D.A.H." I have found in a number of cases that men who were in a lower category and who have been examined and passed into category "A" with perfectly sound hearts, and have been sent to their third line for training, have been returned with distinct heart irregularities. The cause in most cases appears to me that their training has been too strenuous and not sufficiently graduated. After returning to a home service unit, when they come before the board again, there is no trace of heart affection.

While, therefore, the effect of tobacco smoking, overgrowth, and self-abuse in delicate lads may be the cause in a number of cases of heart affection, the most important at the present time seems to be the want of graduation in the training of youths not hitherto having done continued and strenuous physical work.

One of the most encouraging things is that the heart seems to be able to make a complete recovery in the majority of cases under suitable rest and moderate exercise.—I am, etc.,

London, April 15th. JOSIAH OLDFIELD.

MEDICAL BOARDS.

SIR,—Medical boards have had to endure a great deal of criticism, most of it very unjust, from the lay press; personally, I do not remember ever having read therein one word of praise.

It must be recollected that most of the members of medical boards are experienced examiners, who worked for very long hours without complaining, long before these boards were instituted. The insecurity of our position is a serious grievance. Members of medical boards are liable to be dismissed after receiving twenty-four hours' notice, which may result in real hardship for many men who devote their whole time to examining recruits.

We can only be granted twenty-four hours' leave. If we are ill for more than forty-eight hours, we are put on the waiting list, with only an off chance of being reinstated, and we receive no pay during such incapacity. The clerks in the recruiting offices are allowed six weeks' sick leave every year.

If only the authorities would improve our position, chiefly by making it more secure, I feel sure they would have no difficulty in procuring medical examiners, and that the present members of medical boards would be more contented.

I may add, in conclusion, that our work is sometimes very unpleasant, because often we have to bear, as best we may, a great deal of abuse from malingerers and prisoners.—I am, etc.,

May 11th. "PAREGORIC."

THE CALLING UP NOTICE.

SIR,—The warmest thanks of this our harrassed profession are surely due to the Central Medical War Committee for the firm stand they recently took with regard to Lord Derby's calling up notice to medical men.

A correspondent has already pointed out the waste of time and money involved by the holding of hurried committee meetings necessitated by this appeal.

But this is a trifle compared with the utter impossibility of any doctor arranging for his work to be carried on at such short notice even in normal times, and with the inevitable loss such a rapid exit would have entailed.

As a representative of an area which is already much

overworked, may I be allowed to offer in the name of that area our sincere thanks to the Central Medical War Committee?—I am, etc.,

H. L. Evans,
Honorary Secretary East Yorks Local Medical War Committee.

May 8th.

OUR BELGIAN COLLEAGUES AT HOME AND ABROAD.

The following additional subscriptions to the Fund have been received:

	£	s.	d.
Dr. Burrowes	1	1	0
Royal College of Physicians of Edinburgh, for the North British Branch of Pharmaceutical Society of Great Britain (per Dr. Norman Walker)—			
Subscriptions in hand, April, 1915	0	15	0
Dr. James Caskie	1	1	0
Mr. R. Hay	0	10	6
Mr. H. Dryerre	1	1	0
Edinburgh District Chemists' Trade Association (per Mr. A. A. Murray)	2	2	0
Mr. W. G. Johnstone	1	1	0
Mr. J. S. B Heddie	0	10	0
Mr. Alex Inglis	0	10	0
Dr. G. D. H. Carpenter (24th donation—total £24)	1	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund crossed Lloyds Bank, Limited.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

Universities and Colleges.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An extraordinary Comitia was held on May 10th, the President, Dr. Frederick Taylor, being in the chair.

Admission of Fellows.

The following gentlemen, elected to the Fellowship at the Comitia held on April 26th, were admitted, and gave their faith to the College:

Robert Henry Cole, M.D.Lond., David Nunes Nabarro, M.D.Lond., Henry Willoughby Gardner, M.D.Lond., Reginald Henry Miller, M.D.Lond., Percy Whittington Saunders, M.B.Toronto, Wm. Errington Hume, M.D.Camb., Henry MacCormac, M.D.Edin.

Licentiates.

Licences to practise physic were granted to two candidates who had passed the required examination and conformed to the by-laws.

Streatfield Research Fund.

A scheme presented by the Committee appointed by the Royal Colleges of Physicians and Surgeons for the administration of the Streatfield Research Fund was adopted.

Suspension of Systematic Lectures.

On the recommendation of the Committee of Management it was agreed that in consideration of the urgent conditions resulting from the war the Regulations of the Examining Board in England, which require attendance on systematic courses of lectures on anatomy, physiology, medicine, surgery, midwifery, pathology, pharmacology and therapeutics, forensic medicine including insanity, and public health, should not be enforced for the present.

The Committee of Reference.

At the request of the President a further grant was made towards the expenses of the Committee of Reference.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary Council was held on May 10th, when Sir Watson Cheyne, President, was in the chair.

Diplomas of Membership.

Diplomas of membership were granted to 103 candidates found qualified at the recent examinations.

Attendance on Systematic Courses of Lectures.

The attendance on such lectures was no longer made compulsory. This decision was arrived at as a result of a resolution adopted by the Committee of Reference of April 19th.

University of Wales.

Mr. W. F. Haslam was appointed the representative of the College on the Medical Board of the University of Wales for three years from May 12th, 1917, in the vacancy occasioned by the retirement of Mr. C. W. Mansell Moullin.

CONJOINT BOARD IN ENGLAND.

The diplomas of L.R.C.P. and M.R.C.S. have been conferred upon the following candidates:

G. Adler, E. G. Anderson, E. B. Andreae, P. A. Ashcroft, E. V. Beale, D. C. Beaumont, W. T. Beswick, Alethea J. Bolton, A. O. Bolton, A. H. Boon, Marian N. Bostock, E. W. Bowell, J. B. Brash, I. Braun, E. D. Broster, D. Cameron, O. St. L. Campion, J. E. Carpenter, Kathleen L. Cass, H. Chadwick, C. C. Chesterman, H. J. C. Churchill, Stella Churchill, A. M. Clément, G. F. Cobb, J. C. Collins, R. S. Corbett, R. Coyte, W. Cramer, T. M. Cunnington, P. G. S. Davis, H. L. Douglas, J. R. Earp, Mahmoud Erfan, J. Fairbrother, R. French, P. E. F. Frossard, H. Gainsborough, L. Gill, H. Gluckman, E. F. S. Gordon, M. Gourevitch, Grace M. G. Griffith, L. B. Hartley, F. J. Harvey, Lily F. Harwood, S. L. Higgs, H. W. H. Holmes, Cawas Homi, J. C. C. Howe, G. R. Hubbard, O. H. Hyman, Karam Chand Jaidka, Loiza E. Johnston, D. B. S. Jones, D. J. H. Jones, J. I. Keen, J. D. Kenyon, H. W. Leatham, H. W. Lewis, J. B. S. Lewis, I. J. Lipkin, E. E. Llewellyn, L. G. Lunnon, T. H. McLeod, A. N. McMillan, W. Marriott, J. A. Martin, H. G. V. Mence, F. M. Mosely, C. K. Mowll, W. W. Newton, A. L. Packham, A. E. P. Parker, A. H. Pearce, C. V. Pink, W. I. FitzG. Powell, H. N. Pritchett, W. Murad Abdul Rahman, R. E. Rampling, D. W. R. Richardson, R. L. Robinson, A. Rose-Innes, J. Rowland, J. D. Rutherford, J. J. A. Scott, N. F. Smith, E. D. Spackman, M. B. R. Swann, Ellen Sylk, R. H. Tasker, J. P. R. Tennekoon, F. FitzG. Tisdall, W. J. Walters, F. E. G. Watson, Winifred H. Wells, W. H. White, J. P. Williams, J. H. Wiseman, L. H. Woods, W. G. Woolrich.

Obituary.

H. R. HUTTON, M.A., M.B.Cantab.,

FORMERLY PHYSICIAN TO MANCHESTER CHILDREN'S HOSPITAL AND LECTURER IN DISEASES OF CHILDREN, MANCHESTER UNIVERSITY.

Henry Richmond Hutton was a man of marked ability and many activities. His father was a civil engineer and his uncle the distinguished editor and founder of the *Spectator*.

After taking his degree at Cambridge Hutton entered at St. Thomas's, and at the end of his course there was appointed an assistant demonstrator in physiology. This post he resigned on his appointment as physician to the Children's Hospital at Pendlebury after the retirement of Dr. Massiah in the early eighties of last century. For thirty years Hutton worked at the Children's Hospital, and during that long time did a vast service for the welfare of children in Manchester. For the whole period of his office he saw out-patients in addition to visiting the hospital and taking charge of his wards. Not satisfied with this he acted for many years as physician to the Chest Hospital in Manchester and at Bowdon, and was for a time physician to the Ancoats Hospital. As a member of the committee of governors and of the medical board Hutton took due part in the administration of the Children's Hospital.

Hutton was a ready and fluent speaker, and was active in the Pathological Society, of which he was at one time president.

Though he did not write much on medical subjects, possibly because he was inclined to be too critical in the matter of style for ready composition, he gave valuable and ungrudging help in the preparation of his colleague's book on the *Diseases of Children*, and took a large part in the preparation of the abstracts of the Children's Hospital. The Children's Hospital, and the mothers of the district as well as his colleagues and successive generations of medical officers, know how invaluable Hutton's work was.

Hutton succeeded Ashby as lecturer in the university on diseases of children, and it is a pity that ill health compelled him to resign this post, for he devoted much time and thought to his lectures, and was a very successful teacher. This post also gave him the position of physician for children at St. Mary's Hospital, and here again he worked hard at the out-patient department and in the ward.

He took an active part in the development of the infant welfare schemes, being vice-chairman of the Executive Committee of the Schools for Mothers, and gave ungrudgingly his time and energy to promote the measures that were being taken to improve the conditions of infant life in Manchester. Apart from his profession Hutton had many activities. He took a prominent part in local administrative life. At one time he wrote for his uncle in the *Spectator;* he was a musician, a keen angler and shot, and a practical gardener. Perhaps his happiest days were those when he had a shooting of his own. In all these country interests the writer had at different times the

privilege of sharing, and he knows how full was Hutton's delight in country life.

Hutton's brain was essentially keen and active. He loved an argument, and would have been a formidable opponent if he had been at the Bar. Politically he was a strong supporter of the Liberal Party. He was an active champion of any party or cause which was in his view suffering wrong, and was outspoken in criticism of any wrong-doing. Active and energetic as he was, Hutton's health was not robust, and he had a bad breakdown a year or so before his retirement in 1913. He never really regained strength, and in spite of the most devoted care by Mrs. Hutton, after being an invalid for three or four years he died suddenly at his house at Haslemere in March, 1917.

Hutton had many friends who valued him highly, very many who owed him gratitude; a home at all stages of his life to which he was devoted, and in which he was completely happy in a consciousness of good work done. We miss him, and will always remember him as a man of spirit and energy, and a true friend. G. A. W.

PROFESSOR LANDOUZY,

DEAN OF THE MEDICAL FACULTY OF PARIS.

LOUIS LANDOUZY, whose death was announced on May 10th, was born at Rheims on March 27th, 1843. He came of a medical family, his father and grandfather having been doctors. He received his literary education in the *lycée* of his native city. He began his professional studies at the medical school of Rheims and continued them in Paris, where he took his doctor's degree in 1876 with a thesis on convulsions and paralyses connected with fronto-parietal meningo-encephalitis. He was appointed physician to the Paris hospitals and professor of clinical medicine in the Faculty, of which he was dean at the time of his death. He was a member of the Institute of France and of the Académie de Médecine and an officer of the Legion of Honour.

Professor Landouzy was a conspicuous figure in the medical life of France. He was keenly interested in making the virtues of the French spas known to foreigners, and on several occasions personally conducted parties of medical pilgrims to these shrines of healing. He was the author, in conjunction with A. Gautier, Moureu, and de Launay, of a treatise on mineral water cures (1910). He presented a communication, written in conjunction with Jean Heitz, on the scientific basis of balneotherapy at the International Congress of Physiotherapy in Berlin in 1913 and at the International Medical Congress in London in the same year. Among his most important publications are clinical lectures on the various forms of ringworm, in conjunction with C. Lailler (1876); conjugate deviation of the eyes and rotation of the head by excitation or paralysis of the sixth and eleventh pairs (1880); atrophic progressive myopathy, hereditary myopathy without nerve disease, etc., in collaboration with Dejerine (1885); serumtherapy (1898); a medical glossary, in conjunction with Jayle (1902); a textbook of medical anatomy and physiology, in conjunction with L. Bernard (1913); and numerous papers on food and hygiene. Landouzy was a leader in the campaign against tuberculosis in France, and wrote much on that and related matters. A short time ago he was awarded the médaille des epidémics in recognition of his services to preventive medicine, especially in the battle against tuberculosis. In 1915 and 1916 he presented memoirs on syphilis before the war to the Académie de Médecine, which were published in the *Bulletin* of that society, and in 1915 he contributed an article on war and the discharge of the tuberculous soldier to the *Revue d'Hygiène*. He was the editor in chief of the *Revue de Médecine*, and the scientific director of the *Presse Médicale*.

He was fond of travel, was a good judge of pictures, and a collector of books whose interest extended beyond the bindings to their contents. Professor Landouzy married a daughter of the late A. Richet, the distinguished surgeon. There is no issue of the marriage.

WE regret to record the death of Dr. T. EDGAR UNDERHILL, aged 62, who had practised for the last twenty-seven years at Barnt Green, in Worcestershire, having previously for four years practised at Bromsgrove, where he succeeded the late Dr. Prosser. Dr. Underhill belonged to a well-known medical family, his father and uncle having been among the best-known practitioners in South Staffordshire, where their work and name are still continued. He graduated M.B., C.M. at Edinburgh in 1876, and M.D. in 1886; he was also F.R.C.S. and F.R.S.Edin. He joined his father in practice at Tipton, Staffordshire, where he remained for ten years, holding at that time the post of surgeon to the Guest Hospital at Dudley. On moving to Bromsgrove he became medical officer to the school, and also surgeon to the local volunteer battalion of the Worcestershire Regiment, retiring with the rank of surgeon-major after sixteen years' service. He took an active part in local affairs, being vice-chairman of the School Board, and bailiff of the Bromsgrove Court Leet. These activities were combined with a large professional practice; he was President of the Birmingham Branch of the British Medical Association and of the Midland Medical Society. His interest in church work led him to serve several turns of office as President of the Birmingham Medical Mission. Latterly he has worked in connexion with the British Red Cross, and was medical officer to the "Beaconwood" Convalescent Hospital for Wounded Soldiers. He leaves a widow and several sons and daughters, of whom five are serving in H.M.'s Forces. He was a good and worthy representative of his profession, who will be greatly missed by a wide circle of friends and patients.

THE death, on May 5th, is announced of Dr. ISAAC COALBANK, M.D.Paris, M.R.C.S., L.S.A., aged 73. He was a son of the late Rev. Robert Coalbank, Vicar of Old Dalby, Leicestershire. He started early in the sixties at St. Bartholomew's Hospital, and held the offices of house-surgeon to Sir W. Savory and house-physician there after taking the two diplomas of the College and Hall in 1866. He was one of the first of the house-physicians, as there was no such office until his days of studentship at St. Bartholomew's Hospital. Before he became house-physician to the late Dr. Frederick Farre he studied in Paris and travelled with a patient in Syria, Palestine, and Egypt. For a time he filled the appointment of house-surgeon to the York Road Lying-in Hospital. Afterwards he settled in practice in Teddington, ending his days there after many years of useful work.

The Services.

EXCHANGE.

WOULD an officer on Home Service care to exchange with an officer holding appointment on Lines of Communications? Easy exchange from this to Front Line could be arranged if desired. Territorial Officer preferred.—Address, No. 1650, BRITISH MEDICAL JOURNAL Office, 429 Strand, W.C.

Medical News.

BY the will of the late Dr. William Price, of Southerndown, Glamorgan, the medical school of the South Wales University College will benefit by £20,000.

DR. E. GRAHAM LITTLE has been elected by graduates in medicine and surgery of the University of London to fill a fourth term of office (1917–21) on the Senate of the University.

DR. WILLIAM HENRY FRETZ, Senior Medical Officer of Health, St. Kitts, has been appointed an official member of the Legislative Council of the presidency of St. Christopher and Nevis.

THE War Pensions Statutory Committee now endeavour to provide for after-treatment and training for officers about to be invalided from the service, and to assist them, as far as possible, to obtain suitable posts. Application should be made to Lieutenant-General Sir F. W. Stopford, Statutory Committee (Officers' Branch), 4, Cowley Street, Westminster, S.W.1.

ON May 10th a number of medical men and women inspected the College of Ambulance, 3, Vere Street, London, W., and were shown by the Principal, Colonel James Cantlie, the technique and methods of teaching ambulance at the college. Subsequently an interesting display of transport drill, and improvisation of ambulance appliances was given by V.A.D. men and women, who had

been trained there. Among the visitors were Sir Rickman Godlee, president of the college, Sir Thomas Barlow, Sir Henry Morris, and Sir James Crichton-Browne.

MR. ALFRED T. DAVIES, C.B., of the Board of Education, has written under the title *Student Captives* a short account of the British prisoners of war book scheme (educational), whose object is to provide British prisoners of war interned in enemy or neutral countries with educational books. His pamphlet shows how much trouble has been taken by the committee to provide the prisoners with mental interests, and to make suitable provision for their education so as to enable them to redeem the time of their captivity. It includes letters of approval from Lord Crewe and the present President of the Board of Education. Letters of inquiry should be addressed to A. T. Davies, Esq., C.B., Board of Education, Whitehall, London, S.W.1., and the words "Prisoners of War" written in the left-hand top corner.

THE Council of the Association of Public Vaccinators of England and Wales has been in correspondence with the Local Government Board with reference to the Board's recent order permitting medical officers of health to vaccinate small-pox contacts. In order to clear up any misunderstanding which may have existed with regard to this Order, we are asked to state that the Local Government Board has laid down that the object of the Public Health Small-pox Prevention Regulations, 1917, is to empower the medical officer of health to vaccinate or revaccinate small-pox contacts. The Board anticipates that the need for this will only arise when the services of the public vaccinator are not immediately available. In ordinary circumstances the operation should be performed by the public vaccinator as hitherto.

THE first meeting of the National Baby Week Council was held at Armitage House, Great Portland Street, London, W., on May 10th, under the chairmanship of Sir Robert Morant. A report from the Executive Committee was presented, dealing with arrangements for the baby week to be held from July 1st to 7th. Sir Malcolm Morris, in moving the adoption of the report, said that recent statistics showed that during the first three months of the year in which the Local Government Board regulations regarding venereal disease had been in force 4,000 cases of syphilis had been under treatment in the London clinics. These would never have been treated but for the Board's order. The effect of this treatment on the birth-rate of the future would be incalculable. The object of the Council, of which the Premier is president and Lord Rhondda chairman of Council, is to arouse a sense of racial responsibility in order to secure a birthright of mental and bodily health to every child born in the United Kingdom, and to keep the public generally informed as to what is being done for young children and mothers, and what could be done. Information may be obtained from the secretary, Miss Alice Elliott, Kingsway House, Kingsway, W.C.2.

THE *Southampton Medical Directory for 1917*, edited by Dr. A. A. Mackeith, is a somewhat novel publication of 68 pages, price 3s., intended to supply medical practitioners with not only the usual information about all the doctors of the area but of the chemists, dentists, midwives, nurses, hospitals, etc. Several pages are devoted to medico-legal information, and there is a summary of the public health activities of the county borough. Various directions for the use of panel practitioners are culled from the documents which have been from time to time issued by the Commissioners or Insurance Committee, and there are lists of all the Poor Law and other officials of the Local Government Board and other Government departments of the district. A number of pages are devoted to the various medical societies meeting in Southampton, the rules of the societies being given with in some cases extracts from their annual reports. There are also lists of the members of the Insurance, Panel, and Medical War Committees and particulars of practically all the various public, charitable, and private institutions of Southampton which may be of use specially to medical practitioners. For this year the directory is published in what is called outline form, but it is hoped that in the future it may be used for publishing the reports of all the local medical societies. It ought to be of use to all the practitioners of Southampton and district as supplying in a handy and compact form much information which medical men require almost daily.

A REPORT of the work of the Invalid Kitchens of London during the past three years has been published by the Executive Committee. The object of this deserving charity is to provide invalid diet for women after childbirth, for convalescents from hospitals and dispensaries, for cases of pulmonary tuberculosis awaiting admission to sanatoriums, and for other acute cases nursed in their own homes. Dinners are supplied to two classes of patients: (1) Those who, though able to pay, are not in a position to cook appetizing invalid diet in their own homes; (2) those who cannot afford to pay the full cost of invalid food. The war has naturally affected the work of the kitchens in many ways. In 1914 a war emergency committee was formed, and kitchens were opened in twelve new districts, each with a representative local committee. The central organization was incorporated with the scheme of relief inaugurated by the National Relief Fund, and satisfactory arrangements were made with the two principal soldiers' and sailors' benevolent organizations, to the great benefit of the families of the men serving in the forces. Munition workers also have been helped back to health and work. Last summer, however, owing to difficulties of labour and transport, the work of the kitchens had to be restricted, and with the cessation of many contributions in money and kind it became necessary in July, 1916, to close ten kitchens temporarily. Funds are urgently needed to enable the committee to carry on the kitchens that are now open, to reopen as soon as possible those that have been temporarily closed, and to prepare for the time when kitchens will be wanted more than ever. The honorary secretary is Lady Muriel Paget, 32, Victoria Street, S.W.1.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

ANSWERS.

INCOME TAX AND DEFERRED PURCHASE.

IN drawing up an agreement for deferred purchase of a practice, unless it is made quite clear that the future annual payments are merely postponements of a predetermined purchase price, the payer, that is, the purchaser of the practice, may be entitled to deduct income tax from the payments made, which in effect taxes the vendor on the full sale price of the practice. But tax is not deductible from payments accruing *de die in diem*, and not calculated at yearly rates. An alternative method of avoiding the granting of the right to deduct tax would be to exclude any reference to the "year" in stating the basis of payment. If this exclusion be joined to a statement of purchase price the vendor would be doubly safeguarded.

LETTERS, NOTES, ETC.

RHUBARB LEAVES.

DR. ALBERT E. TEBB (London) writes: In recording the unfortunate case of the death of an Enfield clergyman after eating rhubarb leaves cooked as a vegetable, it seems to me that the most important point in regard to causation and to the lesson to be learnt from the case has been omitted. In the report of the inquest given in the daily papers, the servant made special mention of the fact that she had used washing soda in the cooking of the leaves. Surely in this piece of culinary chemistry (quite legitimate in the case of cabbage and of most ordinary greens) lay the fatal mistake—for by its action a soluble oxalate was formed, if not also free oxalic acid.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.